

SR 482 (Sand Lake Road)

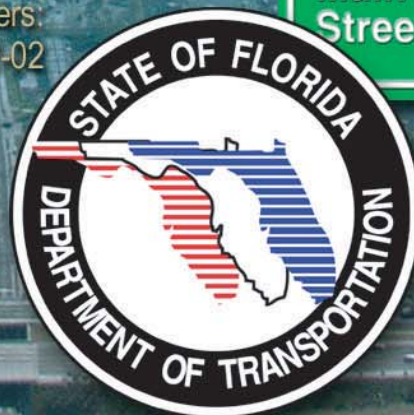
# PD&E Study

From 1,600 Feet West  
of Turkey Lake Road  
to Presidents Drive and  
a Proposed Interchange with  
Florida's Turnpike at SR 482

Financial Project ID Numbers:  
407143-3-22-01 and 407143-3-22-02

FLORIDA'S  
TURNPIKE

Florida's  
Main  
Street



Prepared by



Kimley-Horn  
and Associates, Inc.

PROJECT DEVELOPMENT SUMMARY REPORT  
ORANGE COUNTY



**Florida Department of Transportation  
ENVIRONMENTAL CLASS OF ACTION DETERMINATION**

**1. GENERAL INFORMATION**

County:	Orange County
Project Name:	SR 482 (Sand Lake Road) and Florida's Turnpike Interchange at SR 482
Project Limits:	From 1,600 feet west of Turkey Lake Road to President's Drive and a Proposed Interchange with Florida's Turnpike at SR 482.
	407143-3-22-01 & N/A
	407143-3-22-01
<b>FPN</b>	<b>FEDERAL</b>

**2. PROJECT DESCRIPTION**

- a. Existing: See PDSR – Chapter 3 for SR 482 and Chapter 7 for the new Turnpike Interchange.
- b. Proposed Improvements: See PDSR – Chapter 3 for SR 482 and Chapter 7 for the new Turnpike Interchange.

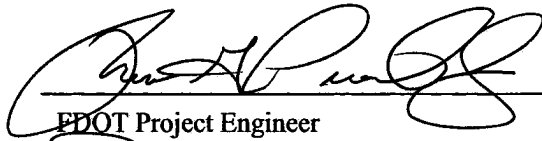
**3. CLASS OF ACTION**

- a. Class of Action:
- ☐ Environmental Assessment
  - ☐ Environmental Impact Statement
  - ☒ Type 2 Categorical Exclusion
- b. Other Actions:
- ☐ Section 4(f) Evaluation
  - ☐ Section 106 Consultation
  - ☒ Endangered Species Assessment
- c. Public Involvement:
- 1. ☐ A public hearing is not required, therefore, approval of this Type 2 Categorical Exclusion constitutes acceptance of the location and design concepts for this project.
  - 2. ☒ A public hearing was held on May 25 2006 and a transcript is included with the environmental determination. Approval of this Type 2 Categorical Exclusion determination constitutes location and design concept acceptance for this project.
    - ☐ An opportunity for a public hearing was afforded and a certification of opportunity is included with the environmental determination. Approval of this Type 2 Categorical Exclusion determination constitutes acceptance of the location and design concepts for this project.
  - 3. ☐ A public hearing will be held and the public hearing transcript will be provided at a later date. Approval of this type 2 Categorical Exclusion DOES NOT constitute acceptance of the project's location and design concepts.
    - ☐ An opportunity for a public hearing will be afforded and a certification of opportunity will be provided at a later date. Approval of this Type 2 Categorical Exclusion determination DOES NOT constitute acceptance of the project's location and design concepts.
- d. Cooperating Agency: ☐ COE ☐ USCG ☐ FWS ☐ EPA ☐ NMFS ☒ None



---

**4. REVIEWER'S SIGNATURES**



FDOT Project Engineer

8 / 16 / 2006

Date



FDOT Environmental Administrator

8 / 16 / 2006

Date



FHWA Transportation Engineer

8 / 16 / 2006

Date

---

**5. FHWA CONCURRENCE**



(For) Division Administrator

8 / 16 / 2006

Date



## 6. IMPACT EVALUATION

Topical Categories	S i g n	M i n	N o n	N o I n v	REMARKS
<b>A. SOCIAL IMPACTS</b>					
1. Land Use Changes	[ ]	[ ]	[x]	[ ]	See Section 4.3.1.1 & 8.2.1.1
2. Community Cohesion	[ ]	[x]	[ ]	[ ]	See Section 4.3.1.2 & 8.2.1.2
3. Relocation Potential	[ ]	[ ]	[x]	[ ]	See Section 4.3.1.3 & 8.2.1.3
4. Community Services	[ ]	[ ]	[x]	[ ]	See Section 4.3.1.4 & 8.2.1.4
5. Title VI Considerations	[ ]	[ ]	[x]	[ ]	See Section 4.3.1.5 & 8.2.1.5
6. Controversy Potential	[ ]	[x]	[ ]	[ ]	See Section 4.3.1.6 & 8.2.1.6
7. Utilities and Railroads	[ ]	[x]	[ ]	[ ]	See Section 4.3.1.7 & 8.2.1.7
<b>B. CULTURAL IMPACTS</b>					
1. Section 4(f) Lands	[ ]	[ ]	[x]	[ ]	Section 4.3.2.1 & 8.2.2.1
2. Historic Sites/District	[ ]	[ ]	[x]	[ ]	Section 4.3.2.2 & 8.2.2.2
3. Archaeological Sites	[ ]	[ ]	[x]	[ ]	Section 4.3.2.2 & 8.2.2.2
4. Recreation Areas	[ ]	[ ]	[x]	[ ]	See Section 4.3.2.3 & 8.2.2.3
<b>C. NATURAL ENVIRONMENT</b>					
1. Wetlands	[ ]	[x]	[ ]	[ ]	See Section 4.3.3.1 & 8.2.3.1
2. Aquatic Preserves	[ ]	[ ]	[ ]	[x]	
3. Water Quality	[ ]	[ ]	[x]	[ ]	See Section 4.3.3.2 & 8.2.3.2
4. Outstanding Fla. Waters	[ ]	[ ]	[ ]	[x]	
5. Wild and Scenic Rivers	[ ]	[ ]	[ ]	[x]	
6. Flood plains	[ ]	[x]	[ ]	[ ]	See Section 4.3.3.3 & 8.2.3.3
7. Coastal Zone Consistency	[ ]	[ ]	[x]	[ ]	See Section 4.3.3.4 & 8.2.3.4
8. Coastal Barrier Islands	[ ]	[ ]	[ ]	[x]	
9. Wildlife and Habitat	[ ]	[x]	[ ]	[ ]	See Section 4.3.3.5 & 8.2.3.5
10. Farmlands	[ ]	[ ]	[ ]	[x]	
11. Essential Fish Habitat	[ ]	[ ]	[ ]	[x]	NMFS Letter dated August 15, 2005
<b>D. PHYSICAL IMPACTS</b>					
1. Noise	[ ]	[ ]	[x]	[ ]	See Section 4.3.4.1 & 8.2.4.1
2. Air	[ ]	[ ]	[x]	[ ]	See Section 4.3.4.2 & 8.2.4.2
3. Construction	[ ]	[x]	[ ]	[ ]	See Section 4.3.4.3 & 8.2.4.3
4. Contamination	[ ]	[x]	[ ]	[ ]	See Section 4.3.4.4 & 8.2.4.4
5. Navigation	[ ]	[ ]	[ ]	[x]	
a. [x] FHWA has determined that a Coast Guard Permit IS NOT required in accordance with 23 CFR 650, Subpart H.					
b. [ ] FHWA has determined that a Coast guard Permit IS required in accordance with 23 CFR 650, Subpart H.					
<b>E. PERMITS REQUIRED</b>					
• SFWMD Individual Environmental Resource Permit					
• USACOE Individual Dredge and Fill					

## 7. WETLANDS FINDING (Applies to Type 2 Categorical Exclusions Only)

In accordance with Executive Order 11990, Protection of Wetlands, and Federal



Highway Administration (FHWA) Technical Advisory T6640.8A, the extent and types of wetlands in the study area were documented and impacts were evaluated.

The SR 482 recommended alternative will impact 12.13 acres of wetlands and 5.93 acres of 'other surface waters. Impacts associated with the new Turnpike interchange include 17.72 acres of wetlands and 4.9 acres of 'other surface water' impacts. Avoidance of wetland impacts is not practicable. All measures have been considered to minimize impact to wetlands and surface waters. To summarize:

- Construction of the Shingle Creek bridge will occur along existing alignment to avoid impacts to adjacent wetlands
- Pond locations will be selected to avoid/minimize impacts to wetlands
- BMP's and erosion control measures will be implemented during construction

The acreages identified here are maximum impacts and efforts to further minimize impacts will be considered during the final design phase.

*Based upon this, it is determined that there is no practicable alternative to the proposed construction in wetlands and that the proposed action includes all practicable measures to minimize harm to wetlands which may result from such use.*

## **8. COMMITMENTS AND RECOMMENDATIONS**

See *Section 1.1*.



# PROFESSIONAL ENGINEER CERTIFICATE

I hereby certify that I am a Registered Professional Engineer in the State of Florida practicing with Kimley-Horn and Associates, Inc. and that I have supervised the preparation and approve the evaluation, findings, conclusions, and technical advice hereby reported for:

**FINANCIAL PROJECT ID Nos.: 407143-3-22-01 and 407143-3-22-02**

**PROJECT: SR 482 (SAND LAKE ROAD)  
FROM 1,600 FEET WEST OF TURKEY  
LAKE ROAD TO PRESIDENTS DRIVE;  
AND, A PROPOSED TURNPIKE  
INTERCHANGE AT SR 482**

This report includes a summary of data collection efforts, corridor analyses, and conceptual design analyses for the SR 482 (Sand Lake Road) PD&E Study. I acknowledge that the procedures and references used to develop the results contained in this report are standard to the professional practice of transportation engineering and planning as applied through professional judgment and experience.

**Signature:**



**Name:**

**Steven G. Godfrey, P.E.**

**P.E. No.:**

**18499**

**Date:**

**August 14, 2006**



# TABLE OF CONTENTS

*Note: This report is divided into two parts: Sand Lake Road widening and Florida's Turnpike Interchange with Sand Lake Road. Part I is contained in Sections 3.0 through 6.0. Part II is contained in Sections 7.0 through 10.0.*

Table of Contents .....	i
List of Figures .....	vii
List of Tables .....	ix
List of Appendices .....	x

## PART I – SAND LAKE ROAD WIDENING

1.0 EXECUTIVE SUMMARY .....	1-1
1.1 Commitments .....	1-1
1.2 Recommendations .....	1-2
1.3 Recommended Alternative .....	1-2
1.3.1 Segment 1—Station 4+20 to Station 20+60 (1,600 Feet West of Turkey Lake Road to Turkey Lake Road) .....	1-2
1.3.1.1 Controlling Design Considerations .....	1-3
1.3.2 Segment 2—Station 20+60 to Station 43+15 (Turkey Lake Road to International Drive) .....	1-4
1.3.2.1 Controlling Design Considerations .....	1-5
1.3.3 Segment 3—Station 43+15 to Station 59+75 (International Drive to Universal Boulevard) .....	1-7
1.3.3.1 Controlling Design Considerations .....	1-7
1.3.4 Segment 4—Station 59+75 to Station 106+00 (Universal Boulevard to Greenbriar Parkway) .....	1-9
1.3.4.1 Controlling Design Considerations .....	1-9
1.3.5 Segment 5—Station 106+00 to Station 144+35 (Greenbriar Parkway to Kingspointe Parkway) .....	1-9
1.3.5.1 Controlling Design Considerations .....	1-10
1.3.6 Segment 6—Station 144+35 to Station 182+00 (Kingspointe Parkway to West of John Young Parkway) .....	1-11
1.3.6.1 Controlling Design Considerations .....	1-11
1.3.7 Segment 7—Station 182+00 to Station 218+00 (West of John Young Parkway to Presidents Drive) .....	1-12
1.3.7.1 Controlling Design Considerations .....	1-12
1.3.8 Recommended Turnpike Interchange Alternative .....	1-12
1.3.8.1 Controlling Design Considerations .....	1-12
1.4 Structures .....	1-13

1.5	Drainage.....	1-13
1.6	Right-of-Way .....	1-14
1.7	Utilities.....	1-14
1.8	Cost .....	1-14
1.9	Environmental Impacts .....	1-15
2.0	INTRODUCTION .....	2-1
2.1	Project Location and General Description.....	2-1
2.2	Resource Documents (on CDs in back of report) .....	2-3
3.0	RECOMMENDED ALTERNATIVE .....	3-1
3.1	Description of Project by Segment .....	3-1
3.1.1	Typical Sections.....	3-1
3.1.1.1	Segment 1—Station 4+20 to Station 20+60 (1,600 Feet West of Turkey Lake Road to Turkey Lake Road).....	3-1
3.1.1.2	Segment 2—Station 20+60 to Station 43+15 (Turkey Lake Road to International Drive) .....	3-5
3.1.1.3	Segment 3—Station 43+15 to Station 59+75 (International Drive to Universal Boulevard).....	3-8
3.1.1.4	Segment 4—Station 59+75 to Station 106+00 (Universal Boulevard to Greenbriar Parkway) .....	3-11
3.1.1.5	Segment 5—Station 106+00 to Station 144+35 (Greenbriar Parkway to Kingspointe Parkway).....	3-15
3.1.1.6	Segment 6—Station 144+35 to Station 182+00 (Kingspointe Parkway to West of John Young Parkway) .....	3-15
3.1.1.7	Segment 7—Station 182+00 to Station 218+00 (West of John Young Parkway to Presidents Drive) .....	3-19
3.2	Design Criteria and Speed .....	3-22
3.2.1	Design Exceptions .....	3-24
3.2.2	Design Variations.....	3-25
3.3	Horizontal Alignment Features.....	3-25
3.4	Vertical Alignment Features .....	3-26
3.5	Lighting.....	3-27
3.6	Right of Way.....	3-29
3.7	Construction Easements.....	3-30
3.8	Access Management .....	3-30
3.9	Structures .....	3-32
3.9.1	Sand Lake Road/SR 435 (Kirkman Road) Interchange.....	3-32
3.9.1.1	Bridge No. 750044: Sand Lake Road Westbound over SR 435 (Kirkman Road) Southbound.....	3-33
3.9.1.2	Bridge No. 750043: Sand Lake Road Eastbound over SR 435 (Kirkman Road) Southbound.....	3-33
3.9.1.3	Bridge No. 750144: Sand Lake Road Westbound over SR 435 (Kirkman Road) Northbound.....	3-36
3.9.1.4	Bridge No. 750143: Sand Lake Road Eastbound over SR 435 (Kirkman Road) Northbound.....	3-39

3.9.1.5	Bridge No. 750045: Sand Lake Road Westbound Off Ramp over SR 435 (Kirkman Road) Northbound.....	3-42
3.9.2	Sand Lake Road over Shingle Creek .....	3-47
3.9.2.1	Bridge No. 750283: Sand Lake Road Westbound and Bridge No. 750292: Sand Lake Road Eastbound. ....	3-47
3.9.3	Turnpike Overpass .....	3-52
3.9.3.1	Bridge No. 750568: Sand Lake Road over Florida's Turnpike. ....	3-52
3.10	Utilities.....	3-55
3.10.1	Existing Facilities.....	3-55
3.10.2	Proposed Facilities .....	3-55
3.10.3	Utility Mitigations.....	3-55
3.11	Maintenance of Traffic (MOT).....	3-58
3.11.1	West of Turkey Lake Road .....	3-59
3.11.2	Turkey Lake Road to International Drive (I-4/SR 400 Interchange).....	3-59
3.11.3	International Drive to Universal Boulevard.....	3-60
3.11.4	Universal Boulevard to Greenbriar Parkway (Kirkman Road/SR 435 Interchange) .....	3-60
3.11.5	Greenbriar Parkway to Kingspointe Parkway.....	3-60
3.11.6	Kingspointe Parkway to John Young Parkway (SR 423).....	3-61
3.11.7	East of John Young Parkway (SR 423) .....	3-61
3.12	Transit Accommodations .....	3-62
3.12.1	General.....	3-62
3.12.2	Lowe's (Station 196+00.00) .....	3-62
3.12.3	Universal Boulevard (Side Street) .....	3-62
3.12.4	Kingspointe Parkway (Station 144+35.00).....	3-62
3.12.5	International Drive (Station 43+15.00).....	3-62
3.13	Intersection Improvements.....	3-63
3.13.1	Turkey Lake Road (Station 20+60) .....	3-63
3.13.2	I-4 (Station 32+00).....	3-63
3.13.3	International Drive (Station 43+15).....	3-64
3.13.4	Universal Boulevard (Station 59+75) .....	3-64
3.13.5	Greenbriar Parkway (Station 105+00).....	3-64
3.13.6	Mandarin Drive (Station 118+00).....	3-65
3.13.7	Kingspointe Parkway (Station 144+00).....	3-65
3.13.8	John Young Parkway (Station 182+00).....	3-65
3.13.9	Presidents Drive (Station 218+00).....	3-65
3.13.10	Storage Lane Requirements .....	3-66
3.13.11	Departure Throat Width.....	3-66
3.14	Design Traffic .....	3-66
3.15	Crash Data.....	3-66
3.16	Drainage Plan.....	3-80
3.16.1	Basins '1' and '2' (Roadway Segments 1 and 2).....	3-81
3.16.2	Basin '3' (Roadway Segments 2 and 3).....	3-84



3.16.3	Basin ‘4’ (Roadway Segment 4) .....	3-84
3.16.4	Basin ‘5’ (Roadway Segment 5) .....	3-85
3.16.5	Basin ‘6’ (Roadway Segments 6 and 7).....	3-85
3.16.6	Basin ‘7’ (Roadway Segment 7) .....	3-86
3.16.7	Drainage Structures.....	3-86
3.17	Geotechnical Considerations .....	3-87
3.18	Special Considerations Affecting Selection of Recommended Alternative .....	3-88
3.18.1	No-Build .....	3-88
3.18.2	Overview of the Build Alternative.....	3-91
3.18.3	Segment 1 – 1,600 Feet West of Turkey Lake Road to Turkey Lake Road .....	3-91
3.18.4	Segment 2 – Turkey Lake Road to International Drive .....	3-92
3.18.5	Segment 3 – International Drive to Universal Boulevard.....	3-92
3.18.6	Segments 4 through 7 – Universal Boulevard to Presidents Drive..	3-92
3.19	Project Costs .....	3-93
4.0	SUMMARY OF ENVIRONMENTAL IMPACTS.....	4-1
4.1	ETDM Concerns Addressed in Study .....	4-1
4.2	Avoidance/Minimization Measures .....	4-1
4.3	Environmental Impact Evaluation .....	4-1
4.3.1	Social Impacts .....	4-1
4.3.1.1	Land Use Changes .....	4-1
4.3.1.2	Community Cohesion .....	4-2
4.3.1.3	Relocation Potential.....	4-3
4.3.1.4	Community Services.....	4-4
4.3.1.5	Title VI Considerations.....	4-4
4.3.1.6	Controversy Potential .....	4-4
4.3.1.7	Utilities and Railroads .....	4-5
4.3.2	Cultural Impacts.....	4-6
4.3.2.1	Section 4(f) .....	4-6
4.3.2.2	Historic Sites/Districts and Archeological Sites.....	4-7
4.3.2.3	Recreation Areas.....	4-8
4.3.3	Natural Environment.....	4-8
4.3.3.1	Wetlands .....	4-8
4.3.3.2	Water Quality.....	4-16
4.3.3.3	Flood plains .....	4-17
4.3.3.4	Coastal Zone Consistency.....	4-18
4.3.3.5	Wildlife and Habitat .....	4-18
4.3.3.6	Rare Plant Habitat.....	4-29
4.3.3.7	Biological Impact Summary .....	4-30
4.3.4	Physical Impacts .....	4-32
4.3.4.1	Noise .....	4-32
4.3.4.2	Air .....	4-32
4.3.4.3	Construction.....	4-33

4.3.4.4	Contamination.....	4-34
5.0	PERMITS AND MITIGATION.....	5-1
5.1	Coordination and Permits .....	5-1
5.2	Mitigation Expected.....	5-3
6.0	SUMMARY OF PUBLIC INVOLVEMENT .....	6-1

## **PART II – FLORIDA'S TURNPIKE INTERCHANGE**

7.0	RECOMMENDED INTERCHANGE ALTERNATIVES.....	7-1
7.1	Design Criteria.....	7-2
7.2	Lighting.....	7-2
7.3	Right of Way.....	7-2
7.4	Access Management .....	7-4
7.5	Structures .....	7-4
7.6	Utilities.....	7-6
7.6.1	Existing Facilities.....	7-6
7.6.2	Proposed Facilities .....	7-6
7.7	MOT (Maintenance of Traffic).....	7-9
7.7.1	John Young Parkway Bridges over Florida's Turnpike (Southbound Bridge No. 754097 and Northbound Bridge No.754098) .....	7-9
7.7.2	Sand Lake Road Bridges over Florida's Turnpike (Westbound Bridge No. 750294 and Eastbound Bridge No. 750568).....	7-9
7.7.2.1	Sand Lake Road.....	7-9
7.7.2.2	Florida's Turnpike .....	7-10
7.7.3	Florida Turnpike Bridge over Shingle Creek (Bridge No. 750065) .....	7-10
7.8	Design Traffic .....	7-10
7.9	Drainage Plan.....	7-14
7.10	Geotechnical Considerations .....	7-14
7.11	Special Considerations Affecting Selecting Recommended Alternative.....	7-17
7.11.1	No-Build .....	7-17
7.11.2	Overview of Build Alternatives .....	7-17
7.11.3	Selection of Recommended Alternative .....	7-18
7.12	Project Costs .....	7-19
8.0	SUMMARY OF ENVIRONMENTAL IMPACTS.....	8-1
8.1	Avoidance/Minimization Measures .....	8-1
8.2	Environmental Impact Evaluation .....	8-1
8.2.1	Social Impacts.....	8-1
8.2.1.1	Land Use Changes .....	8-1
8.2.1.2	Community Cohesion .....	8-2
8.2.1.3	Relocation Potential.....	8-2
8.2.1.4	Community Services.....	8-3
8.2.1.5	Title VI Considerations.....	8-3
8.2.1.6	Controversy Potential .....	8-3

8.2.1.7	Utilities and Railroads .....	8-4
8.2.2	Cultural Impacts.....	8-4
8.2.2.1	Section 4(f) .....	8-4
8.2.2.2	Historic Sites/Districts and Archeological Sites.....	8-4
8.2.2.3	Recreation Areas.....	8-5
8.2.3	Natural Environment.....	8-5
8.2.3.1	Wetlands .....	8-5
8.2.3.2	Water Quality.....	8-8
8.2.3.3	Floodplains .....	8-8
8.2.3.4	Coastal Zone Consistency.....	8-9
8.2.3.5	Wildlife and Habitat .....	8-9
8.2.3.6	Rare Plant Habitat.....	8-20
8.2.4	Physical Impacts .....	8-23
8.2.4.1	Noise .....	8-23
8.2.4.2	Air .....	8-23
8.2.4.3	Construction.....	8-24
8.2.4.4	Contamination.....	8-26
9.0	PERMITS AND MITIGATION.....	9-1
9.1	Permits Required and Coordination Needed.....	9-1
9.2	Mitigation Expected.....	9-2
10.0	SUMMARY OF PUBLIC INVOLVEMENT .....	10-1

# LIST OF FIGURES

## PART I – SAND LAKE ROAD WIDENING

<u>Figure</u>	<u>Page</u>
2-1 Project Location Map.....	2-2
3-1 Segment Location Map.....	3-2
3-2 Segment 1 Existing Typical Section.....	3-4
3-3 Segment 1 Recommended Typical Section .....	3-6
3-4 Segment 2 Existing Typical Section .....	3-7
3-5 Segment 2 Recommended Typical Section .....	3-9
3-6 Segment 3 Existing Typical Section .....	3-10
3-7 Segment 3 Recommended Typical Section .....	3-12
3-8 Segment 4 Existing Typical Section .....	3-13
3-9 Segment 4 Recommended Typical Section .....	3-14
3-10 Segment 5 Existing Typical Section .....	3-16
3-11 Segment 5 Recommended Typical Section .....	3-17
3-12 Segment 6 Existing Typical Section .....	3-18
3-13 Segment 6 Recommended Typical Section .....	3-20
3-14 Segment 7 Existing Typical Section .....	3-21
3-15 Segment 7 Recommended Typical Section .....	3-23
3-16 SR 482 Westbound over SR 435 Southbound Plan and Elevation .....	3-34
3-17 SR 482 Westbound over SR 435 Southbound Typical Section.....	3-35
3-18 SR 482 Eastbound over SR 435 Southbound Plan and Elevation .....	3-37
3-19 SR 482 Eastbound over SR 435 Southbound Typical Section .....	3-38
3-20 SR 482 Westbound over SR 435 Northbound Plan and Elevation .....	3-40
3-21 SR 482 Westbound over SR 435 Northbound Typical Section.....	3-41
3-22 SR 482 Eastbound over SR 435 Northbound Plan and Elevation .....	3-43
3-23 SR 482 Eastbound over SR 435 Northbound Typical Section .....	3-44
3-24 SR 482 Westbound Off-Ramp over SR 435 Northbound Plan and Elevation ..	3-45
3-25 SR 482 Westbound Off-Ramp over SR 435 Northbound Typical Section .....	3-46
3-26 Existing Bridges at Shingle Creek Plan and Elevation.....	3-48
3-27 Existing Bridges at Shingle Creek Typical Section.....	3-49
3-28 Proposed Bridges at Shingle Creek Plan and Elevation .....	3-50
3-29 Proposed Bridges at Shingle Creek Typical Sections.....	3-51
3-30 Proposed Bridges at Shingle Creek Miscellaneous Details .....	3-53
3-31 Modified Turnpike Bridge .....	3-54
3-32 Opening Year 2010 AADT/DDHV .....	3-67



3-33	Mid-Design Year 2020 AADT/DDHV .....	3-68
3-34	Design Year 2030 AADT/DDHV .....	3-69
3-35	Opening Year 2010 DHV .....	3-70
3-36	Mid-Design Year 2020 DHV .....	3-71
3-37	Design Year 2030 DHV .....	3-72
3-38	Opening Year 2010 Level of Service.....	3-73
3-39	Mid-Design Year 2020 Level of Service .....	3-74
3-40	Design Year 2030 Level of Service .....	3-75
4-1	Wetland and Habitat Impacts Map .....	4-10
4-2	Wetland and Habitat Impacts Map .....	4-11
4-3	Wetland and Habitat Impacts Map .....	4-12
4-4	Wetland and Habitat Impacts Map .....	4-13
4-5	Wetland and Habitat Impacts Map .....	4-14
4-6	Potential Contamination Sites and Ratings.....	4-35
4-7	Potential Contamination Sites and Ratings.....	4-36
4-8	Potential Contamination Sites and Ratings.....	4-37

## **PART II – FLORIDA’S TURNPIKE INTERCHANGE**

7-1	SR 482 Eastbound over Florida’s Turnpike Typical Section (Under Construction) .....	7-5
7-2	SR 482 over Florida’s Turnpike Typical Section (Proposed).....	7-7
7-3	2010 AADT/DHV/Level of Service .....	7-11
7-4	2020 AADT/DHV/Level of Service .....	7-12
7-5	2030 AADT/DHV/Level of Service .....	7-13
7-6	Recommended Alternative Proposed Pond Locations.....	7-15
8-1	Wetland and Habitat Impacts Map .....	8-12
8-2	Wetland and Habitat Impacts Map .....	8-13

# LIST OF TABLES

## PART I – SR 482 WIDENING

<u>Table</u>	<u>Page</u>
3-1 Design Criteria Matrix .....	3-3
3-2 Horizontal Curve Data .....	3-26
3-3 Existing and Proposed Right-of-Way .....	3-29
3-4 Existing Utility Facilities .....	3-56
3-5 Crash Summary.....	3-76
3-6 Wet Conditions and Nighttime Crashes.....	3-76
3-7 Crash Summary by Type .....	3-77
3-8 Crash Summary by Type and Location .....	3-78
3-9 Recommended Ponds.....	3-82
3-10 Existing Drainage Structures .....	3-87
3-11 Alternatives Evaluation Matrix.....	3-89
3-12 Project Costs .....	3-93
4-1 Summary of Wetland Impacts .....	4-15
4-2 Summary of Other Surface Water Impacts.....	4-16
4-3 Federal and State Listed Species Potentially Present within Project Area .....	4-20
4-4 Summary of Habitat Impacts .....	4-22
4-5 CO Florida 2004 Results Data Summary.....	4-32
4-6 Summary of Potential Contamination Sites.....	4-40
5-1 Summary of ETAT Natural Resources Comments .....	5-2

## PART II – FLORIDA’S TURNPIKE INTERCHANGE

7-1 Design Criteria Matrix .....	7-3
7-2 Existing Utilities .....	7-8
7-3 Project Costs .....	7-19
8-1 Summary of Wetland Impacts .....	8-7
8-2 Summary of Other Surface Water Impacts.....	8-7
8-3 Federal and State Listed Species Potentially Present Within Project Area .....	8-11
8-4 CO FL 2004 Results Data Summary .....	8-24

## **LIST OF APPENDICES**

Appendix A – Team Meeting Minutes  
Appendix B – Typical Section Package  
Appendix C – Property Owner Correspondence  
Appendix D – Drainage Basin Maps  
Appendix E – SR 482 Widening Concept Plans  
Appendix F – Storage Length Tables  
Appendix G – FDOT Programmed Segment Costs  
Appendix H – Environmental Class of Action Determination  
Appendix I – Sand Lake Road AN Comments and Responses  
Appendix J – Sand Lake Road SHPO Coordination Letter  
Appendix K – Water Quality Impact Evaluation  
Appendix L – USFWS Concurrence Correspondence  
Appendix M – Public Hearing Correspondence  
Appendix N – Florida’s Turnpike Interchange Concept Plans  
Appendix O – Turnpike Interchange Alternatives Evaluation  
Appendix P – Turnpike Interchange Traffic Operations Evaluation  
Appendix Q – Turnpike Interchange AN Comments and Responses  
Appendix R – Turnpike Interchange SHPO Coordination Letter

## **1.0 EXECUTIVE SUMMARY**

### **1.1 Commitments**

- To assure the protection of the Eastern indigo snake during construction, the FDOT will incorporate the guideline “Standard Protection Protocols for the Eastern Indigo Snake” into the final project design and will require that the construction contractor abide strictly to the guidelines during construction.
- FDOT commits to conducting a preconstruction survey to determine the presence of bats at the Kirkman Road and Shingle Creek bridges. If present, bats will be excluded from their roosts prior to construction.
- FDOT will coordinate with the permitting agencies and with U.S. Fish and Wildlife Service (USFWS) during the design and permitting phase. Compensation for wetland impacts that are unavoidable in the construction of this project will be mitigated according to Section 373.4137 Florida Statutes. In order to avoid adverse impacts on wood storks, FDOT will encourage South Florida Water Management District to provide the mitigation for wetland impacts which will be in-kind and have similar hydrology to what is impacted.
- The FDOT will coordinate with the appropriate regulatory agencies as required throughout the design and permitting of the project.
- A median separator will not be constructed on International Drive on the north side of Sand Lake Road.
- An eastbound directional opening will be provided at the entrance to Quality Inn/McDonalds east of I-4.
- The Shingle Creek Trail will be included on and under new Shingle Creek bridges.
- FDOT will design and construct the recommended improvements described in this report from west of Turkey Lake Road to MP 2.83 (west of John Young Parkway). Side street improvements on Turkey Lake Road are excluded. Side street improvements on International Drive and Universal Boulevard are included. Improvements from MP 2.83 to Presidents Drive, which include sidewalk



improvements and turn lanes at Presidents Drive, will be designed and constructed as a separate future project.

## 1.2 Recommendations

- Orange County has expressed a desire to use the FDOT contractor for utility replacements along Sand Lake Road in conjunction with roadway construction. It is recommended that FDOT coordinate with Orange County Utilities and enter into a Utility Work by Highway Contractor Agreement as appropriate. Team meeting minutes are provided in *Appendix A*.
- In order to enhance driver understanding and awareness, Orange County should consider an integrated guide sign system to guide unfamiliar motorists to destinations in the area.
- Guide signing related to lane use and trail blazing to I-4, which is included in the design project, should recognize that tourists with diverse nationalities use the corridor.

## 1.3 Recommended Alternative

The recommended typical sections are provided in *Appendix B* and described below.

### 1.3.1 Segment 1—Station 4+20 to Station 20+60 (1,600 Feet West of Turkey Lake Road to Turkey Lake Road)

This segment provides transitions from the existing four-lane section to the proposed six-lane section near the intersection (Station 4+20 to Station 17+00). Beginning at Station 17+00, the typical section provides for a six-lane urban section within 127.5 feet of right-of-way. This will require 7.5 feet of right-of-way to be acquired on the north side. It includes three 11-foot lanes in both the eastbound and westbound directions separated by a 27.5-foot-wide raised median with a mountable Type E curb and gutter. Two 11-foot left-turn lanes and an 11-foot right-turn lane are also provided.

This segment provides for a Type F curb and gutter and six-foot sidewalks. Bicycle lanes are not included, as additional right-of-way would be needed and there are no plans by Orange County to continue bicycle lanes further west. Gravity walls will be used to harmonize the segment with existing developed property. Construction easements of up to 10 feet in width will be needed to allow construction of the gravity walls. Construction easements were selected over right-of-way to reduce permanent impacts to parking in adjacent site development. Drainage for this segment will be accommodated by a closed drainage system to collect runoff. Stormwater will be discharged to an offsite detention pond, or a new exfiltration trench system within the roadway right-of-way to provide water treatment and retention.

#### 1.3.1.1 Controlling Design Considerations

Bicycle lanes and related right-of-way have been excluded (see Section 3.18.3).

Drainage may be accommodated in Pond 2A or by exfiltration. Drainage will be combined with part of Segment 2 (see Section 3.16.1).

The Rialto property, located on the north side of Sand Lake Road, is undergoing redevelopment. Final development plans, not available to the PD&E Study, should be obtained for consideration in final design.

Orange County will permit an interim developer funded improvement. Coordination should be maintained to allow the most effective integration of that project with the full widening project (see Section 6.0).

Right-of-way is taken from the north (see Section 3.18.3). This will avoid impacts to parking on all sites except for possible minor parking impacts on the Rialto site. The extent of the impacts will depend upon the final Rialto development site plan.

### 1.3.2 Segment 2—Station 20+60 to Station 43+15 (Turkey Lake Road to International Drive)

The existing segment currently provides six through lanes and auxiliary lanes serving the eastbound turns onto I-4 and the westbound loop ramp onto I-4. All lanes in this section will be retained. The loop ramp lanes and separator will remain in place. The curb on the south side will be moved back 5.7 feet and through lanes will be 11 feet wide. Turn lanes will be reduced to 11 feet wide except as noted below. The reduced lane widths and curb line adjustment provides for four-foot bike lanes on each side and an added westbound lane to accommodate left-turns at Turkey Lake Road. The added lane will be 10.5 feet in width. Dual left-turn lanes and a single right-turn lane will be provided at Turkey Lake Road and at International Drive.

A concrete separator will be provided near Turkey Lake Road between the westbound left-turn lanes and the westbound through lanes. An additional lane will be added on the westbound I-4 off ramp to provide access to the left-turn lanes for Turkey Lake Road.

The dual left-turn lanes on the eastbound I-4 off ramp will be reconfigured to provide a curved alignment. This change, along with geometrical median adjustments, will make it clear to motorists that the movement from the eastbound off ramp to the eastbound on ramp is not permitted. The changes will allow westbound traffic using the loop lanes to flow at all times except during the eastbound left-turn phase. This will greatly enhance the signal efficiency and reduce the likelihood of queues backing up to the International Drive intersection.

Turn lane improvements will be provided on International Drive north and south of Sand Lake Road. Right-of-way will be needed at the intersections to accommodate the proposed improvements.

Stormwater will be accommodated by a closed drainage system. Near Turkey Lake Road the drainage will be combined with basin 1. Within the I-4 interchange, the drainage can

be accommodated by areas within the interchange. East of the interchange drainage will be discharged to detention ponds within the Kirkman Road interchange.

#### 1.3.2.1 Controlling Design Considerations

The sidewalk on the south side under I-4 was reduced from eight feet to 6.3 feet in order to accommodate the lane feeding left-turns at Turkey Lake Road. The sidewalk will be at the curb but the four-foot bicycle lane will provide a buffer.

Careful coordination was undertaken with multiple property owners. The access plan between I-4 and International Drive and on International Drive should be maintained (see Section 3.8).

The McDonalds circulation aisle in front of the restaurant is on FDOT right-of-way and functions as a frontage road. This function should be retained.

A second eastbound right-turn lane was recommended in the Design Traffic Report. It was not included in the recommended concept plans at the request of FDOT Traffic Operations since this is a location of high pedestrian volume and dual right-turn lanes significantly increase pedestrian crossing conflicts. Right-of-way impacts would also be prohibitively large.

A raised median is not included on the north leg of International Drive since it would adversely affect access of adjacent property and since no median separators are provided on the section of International Drive north of Sand Lake Road. Conversely, the south leg of International Drive has a median except in the vicinity of the Sand Lake Road intersection. The introduction of dual left-turn lanes warrants a median separator and is consistent with the rest of the roadway. Due to the configuration of adjacent development, no major impact to property access will result from the recommended separator as long as median access is provided as shown on the concept plans.



Right-of-Way West of I-4 – Limited right-of-way is required on the south side. This allows improved alignment through the Turkey Lake Road intersection and minimizes impacts to the 7-Eleven site and the adjacent vacant site on the north side. The vacant site is going through an approval process and is providing right-of-way to Orange County. In order to minimize damages to the 7-Eleven site, the roadway drainage system should accommodate all drainage from the 7-Elven site. Right-of-way needed on the south side of Sand Lake Road and on the south leg of Turkey Lake Road is being considered in a proposed land swap between the property owner and Orange County.

Right-of-Way East of I-4 – A limited amount of right-of-way is to be acquired from the south side. This will allow the continuation of a full auxiliary lane serving the I-4 ramps beginning at International Drive. The auxiliary lane is critical for safe traffic flow and to allow flexibility in operating the northbound International Drive dual left-turn lanes in feeding Sand Lake Road and I-4. The setback to the outdoor advertising sign located at the southwest corner of International Drive and Sand Lake Road will be less than code. However, provision exists within Orange County code to adjust the setback and maintain the sign as a conforming use. Careful coordination with the Orange County Zoning Department should be maintained. Orange County will work closely with FDOT during the design process to provide for reduced impacts during the right-of-way phase.

Right-of-way will be required on the west side of International Drive. It is anticipated that the frontage parking along the south leg of International Drive can be retained thus minimizing acquisition costs. An Orange County lift station will need to be relocated adjacent to the north leg of International Drive. The actual footprint will depend upon final design of the lift station. A maximum footprint is shown on the concept plans. This is larger than the existing site, which is reportedly substandard. The location of the lift station as shown is critical to avoid major sewer line relocations.

### 1.3.3 Segment 3—Station 43+15 to Station 59+75 (International Drive to Universal Boulevard)

The proposed typical section provides a six-lane urban section within 125.5 feet of right-of-way. This will require right-of-way acquisition of typically 15.5 feet from the north side and 10 feet from the south side of the roadway. The typical section includes three 11-foot lanes in both directions separated by a 27.5-foot-wide raised median with a mountable Type E curb and gutter. This segment provides for a Type F curb and gutter, four-foot bicycle lanes, and a six-foot sidewalk adjacent to the northern and southern side of the roadway. The median accommodates dual left-turn lanes at the intersections with International Drive and Universal Boulevard. Side street improvements will be provided on Universal Boulevard. Drainage for this segment will be accommodated by a closed drainage system to collect runoff. Stormwater will be discharged to offsite detention ponds in the Kirkman interchange to provide water treatment and detention. Retaining walls are utilized where necessary to minimize permanent right-of-way impacts. These retaining walls will require 10 foot construction easements to facilitate their construction.

#### 1.3.3.1 Controlling Design Considerations

Impacts to adjacent property are unavoidable. A westbound right-turn lane at International Drive was recommended in the Design Traffic Report. The lane was excluded because the right-turn volume is projected to be relatively low and the benefits of the turn lane would be minimal. There would be significant impacts to the Perkins parking area if the right-turn lane were included. The recommended alignment will require minor right-of-way acquisition from Perkins. The oversized circulation aisle can be reduced to avoid parking loss.

The typical section shows worse case impacts to Popeye's, Fishbones, and the Wyndham Resort. Close coordination with representatives of these properties will be critical during the design process. Although roadway and property elevations were not available during the PD&E Study, it is clear that if Sand Lake Road remains at its current elevation, the 125.5-foot right-of-way with retaining walls will be needed. In addition, 10 foot construction easements and/or special construction techniques will be needed to construct

the walls. Every effort should be made to minimize project impacts to these adjacent properties.

It is anticipated that some impacts can be reduced by raising the roadway grade. It is important to maintain at least eight feet of sidewalk at Popeye's measured from the building face. Matching grade would allow joint use of sidewalk space. If a retaining wall is required, separate public and private sidewalks will be needed. Care needs to be provided regarding site signing, pedestrian access, drive through access, driveway sight distance, and interconnected access with Fishbones.

The Fishbones site will lose frontage parking. The circulation aisle should be protected. In addition, parking should be removed adjacent to the building instead of removing parking along the road. This will maximize the inbound radius for vehicles entering from Sand Lake Road. Provision should be made to relocate the existing sign. Site drainage retention can be transferred from the site to the roadway system to provide some space on site for parking recovery.

The Wyndham site representatives are concerned with any changes that would make the driveways steeper or reduce circulation radii. The site is currently designed for minimum grades and radii to accommodate buses for their convention center activities. Further, interruption of the flow on the circulation aisle parallel to Sand Lake Road should be avoided to the extent possible. Any interruption, even briefly during construction, is reported to expose Wyndham to damages related to long term bookings. Specific correspondence received from representatives of these three properties is provided in *Appendix C*. Close coordination with Orange County to provide for relief for setbacks and sign conformity is very important in minimizing impacts to the properties.

The alignment for the Universal Boulevard intersection was set to allow future sidewalk construction on the west side of Universal Boulevard.

#### 1.3.4 Segment 4—Station 59+75 to Station 106+00 (Universal Boulevard to Greenbriar Parkway)

The proposed typical section is a six-lane rural section within a minimum right-of-way of 270 feet. It includes three 12-foot lanes and 12-foot shoulders of which five feet is paved. The paved shoulders can accommodate bicycles. The ramp serving southbound Kirkman Road to westbound Sand Lake Road will be reconstructed to extend the weave area for motorists who use the ramp and desire to travel south on Universal Boulevard. This segment includes roadside swales and a variable width depressed median. Drainage for this segment will be accommodated by an open drainage system with swales to collect runoff. Stormwater will be discharged to infield onsite detention ponds to provide water treatment and detention. No new right-of-way is required in this segment.

##### 1.3.4.1 Controlling Design Considerations

A base premise in the PD&E Study was to avoid modifications to the Kirkman Road interchange. Ramp modifications are recommended primarily to accommodate widening. The most cost effective widening is to the outside.

There are existing vertical clearance deficiencies which will not be affected by the widening. The existing deficiencies could likely be solved by lowering existing roadway profiles; however, these changes are not included in the Sand Lake Road project. They will be addressed as a part of future interchange studies and design modifications.

#### 1.3.5 Segment 5—Station 106+00 to Station 144+35 (Greenbriar Parkway to Kingspointe Parkway)

The recommended typical section is a six-lane urban section within a minimum right-of-way of 150 feet. It includes three 12-foot lanes in each direction separated by a 29.5-foot-wide raised median with a mountable Type E curb and gutter. This segment provides for a Type F outside curb and gutter. Five-foot sidewalks are provided on both sides. A minimum eight-foot grassed area is provided between the curb and the sidewalk where possible within existing right-of-way. Four-foot bicycle lanes are included. Drainage for this segment will be accommodated by a closed drainage system to collect

runoff. Stormwater will be discharged to offsite detention ponds to provide water quality treatment and detention.

#### 1.3.5.1 Controlling Design Considerations

Pond 5B accommodates drainage for this segment. A recent acquisition of the property containing Pond 5B has created additional drainage alternatives which have been proposed by the new property owner. These involve adjacent properties which are also owned by the new property owner of the subject property. Correspondence related to this matter is contained in *Appendix C*. These alternatives should be considered in the design phase.

The intersection of Greenbriar Parkway and Sand Lake Road is currently unsignalized. The Design Traffic Study indicates that signalization may be warranted in the future. Due to the wide median at this location, full signalization will be inefficient. Further, Orange County desires to avoid signalization in order to maximize Sand Lake Road capacity. Realignment alternatives did not reveal an acceptable alignment without impacting the Kirkman Road interchange. For these reasons, two stages of improvements are recommended. The initial stage provides for adjustments to the existing geometry to provide for an acceleration lane for southbound to eastbound turns. This configuration could include signalization of the westbound intersection. However, dual lefts would be preferred upon signalization to minimize the impact on westbound flow. As such, the related acceleration lane would be converted to a dual left signalized configuration. Access south of the intersection should be managed to avoid a signalized side street approach. This would further reduce the intersection efficiency. However, right-in/right-out access away from the intersection should be considered. In recognition of this access consideration, a directional median opening is provided in the recommended plan west of Mandarin Drive.

The signalization at Kingspointe Parkway west is to be relocated to Kingspointe Parkway east. This allows the unsignalized eastbound left-turns to operate under the shadow of the downstream signal. It allows left-turn in access at both roadways and minimizes

driveway conflicts that would otherwise occur on Kingspointe Parkway east and west and the Racetrac driveways. The new signal location also affords a pedestrian crossing connecting the Shingle Creek Trail to the sidewalk on the south side of Sand Lake Road. The signal also enhances crossings for transit patrons.

#### 1.3.6 Segment 6—Station 144+35 to Station 182+00 (Kingspointe Parkway to West of John Young Parkway)

The recommended typical section provides a six-lane rural segment within 250 feet of right-of-way. It includes three 12-foot lanes, 12-foot shoulders, five feet of which are paved, and a 40-foot-wide depressed median. This section provides for roadway swales and a minimum sidewalk width of five feet on the south side of the roadway. Bicycles will be accommodated on five-foot paved shoulders. A 12-foot wide sidewalk will be provided on the north side from Kingspointe Parkway east to the Shingle Creek Bridge. The Shingle Creek Bridge will provide a 14-foot sidewalk on the north side and will connect to a 14-foot wide switchback ramp to serve the Shingle Creek Trail. The twin bridges over Shingle Creek will be reconstructed. The trail will be 12-feet wide under the bridges.

Drainage for this segment will be accommodated by an open drainage system with swales to collect runoff. The swales will provide some stormwater treatment prior to discharging to Shingle Creek. Compensating treatment will be provided in Pond 5B for the untreated stormwater in this segment.

##### 1.3.6.1 Controlling Design Considerations

The proposed clearance under the Shingle Creek Bridges for the Shingle Creek Trail is eight feet. The desired 10 feet was reduced to the minimum of eight feet through Value Engineering analyses. The eight-foot clearance is consistent with the design concept for Shingle Creek Trail.

There will be some floodplain encroachment by the construction of the Shingle Creek Trail within the Sand Lake Road right-of-way. This impact will be mitigated in a floodplain compensation pond on property owned by the FDOT located north of Sand Lake Road between John Young Parkway and Florida's Turnpike.

### 1.3.7 Segment 7—Station 182+00 to Station 218+00 (West of John Young Parkway to Presidents Drive)

This segment is already six-laned except for a short segment which is located 1,900 feet west of Florida's Turnpike. This segment will be resurfaced and restriped to six lanes. A second left-turn lane will be provided on the eastbound approach to Presidents Drive. Side street improvements will be provided on Presidents Drive. A five-foot sidewalk is proposed on the south side of the roadway. No ponds are anticipated.

#### 1.3.7.1 Controlling Design Considerations

The Turnpike interchange, proposed at Sand Lake Road, will require bridge widening. If the sidewalk improvement for this segment is constructed at the same time as the bridge widening for the interchange, the future sidewalk space can be used cost effectively to maintain traffic. Conversely, if the sidewalk is constructed first, additional bridge widening would be needed later to maintain both vehicular and pedestrian traffic. This would require construction of bridge structure beyond the ultimate need.

### 1.3.8 Recommended Turnpike Interchange Alternative

The recommended alternative is a build alternative at Sand Lake Road and Florida's Turnpike. A standard diamond interchange will be provided except in the northwest quadrant. In this quadrant a loop ramp will be provided for westbound to southbound traffic. The southbound off ramp will be aligned with the existing Wal Mart/Lowe's commercial driveway. Sun Pass only access will be provided to and from the north. Ramps to and from the north will be two-laned due to the heavier traffic demand in that direction. Signalization will be provided at both ramp intersections. No change in the commercial center access will occur except that existing right-in/right-out and left-in turns will come under signal control. Northbound lefts will continue to be prohibited.

#### 1.3.8.1 Controlling Design Considerations

The southern most span on the John Young Parkway Turnpike bridge will need to be lengthened. This should occur prior to the development of Orange County's proposed single point diamond interchange at John Young Parkway and Sand Lake Road, as each

structure can maintain four lanes of traffic during construction. Once the interchange is completed, six lanes will need to be maintained on John Young Parkway. This would require unnecessary widening of one of the John Young Parkway structures so it could accommodate six lanes during construction.

## **1.4 Structures**

The proposed Sand Lake Road widening project provides for the widening of four bridges in the Kirkman Road interchange. In addition, two bridges will be replaced over Shingle Creek. The bridge height will accommodate 100-year flood requirements and clearance for the Shingle Creek Trail. The eastbound bridge over the Turnpike will be widened to accommodate a six-foot sidewalk.

In order to accommodate the Turnpike interchange, the westbound Turnpike bridge will be replaced and the eastbound bridge over the Turnpike will be widened to accommodate dual left-turn lanes and the replacement of the westbound bridge. The south end spans of the John Young Parkway bridges over the Turnpike will be reconstructed and the southbound Turnpike bridge over Shingle Creek will be widened.

## **1.5 Drainage**

Drainage for Sand Lake Road widening will be accommodated using five ponds. Three ponds will be located within existing right-of-way. Two ponds will require right-of-way. Ponds are shown on the drainage basin maps in *Appendix D*. Additional drainage requirements for the Turnpike interchange will be provided in two ponds on property owned by the FDOT. As noted in Section 1.3.5.1, Pond 5B is located on property which has recently been sold. The new owner has suggested alternative drainage solutions which are more complicated but could be cost saving. These should be considered in the design phase. Related correspondence is provided in *Appendix C*.



## **1.6 Right-of-Way**

A total of 9.0 acres of right-of-way will be acquired from 41 parcels to accommodate the roadway widening and pond sites. Turkey Lake Road improvements which are not part of the initial construction project require 0.34 acres from three parcels. In addition, 0.34 acres of right-of-way from three parcels will be needed for the Turnpike interchange. Construction easements are recommended in lieu of right-of-way adjacent to gravity walls to minimize permanent impacts to parking and circulation on adjacent site development.

## **1.7 Utilities**

Utility adjustments will be required primarily west of Universal Boulevard. Reconstruction of an existing Orange County Utilities (OCU) force main is anticipated via an agreement between OCU and the FDOT. A lift station located on the west side of International Drive north of Sand Lake Road will need to be relocated. Other utilities, located adjacent to the roadway in existing right-of-way, will be relocated in the expanded right-of-way.

## **1.8 Cost**

Projected project costs are provided below. The project is currently being programmed in multiple segments. These are further described in *Appendix G*.

	<u>SR 482 Widening</u> <sup>(1)</sup>	<u>Turnpike Interchange</u> <sup>(2)</sup>
Construction	\$50.5	\$39.8
Mitigation	\$ 1.5	\$ 1.7
Right-of-Way	\$22.5	\$ 0.9
Design	\$ 5.5	\$ 5.6
CE&I (10%)	\$ 5.1	\$ 4.0
Construction Incentive (5%)	<u>\$ 2.5</u>	<u>N/A</u>
<b>Total Project Cost</b>	<b>\$87.6</b> <sup>(3)</sup>	<b>\$52.0</b>

<sup>(1)</sup> LRE date 8/15/06; Right-of-way cost date 8/14/06

<sup>(2)</sup> LRE date 5/8/06; Right-of-way cost date 4/19/06

<sup>(3)</sup> Does not include Turkey Lake Road side street improvements (total cost = \$2.1 M) which are not included in the initial construction project.

## 1.9 Environmental Impacts

See following Environmental Class of Action Determination.

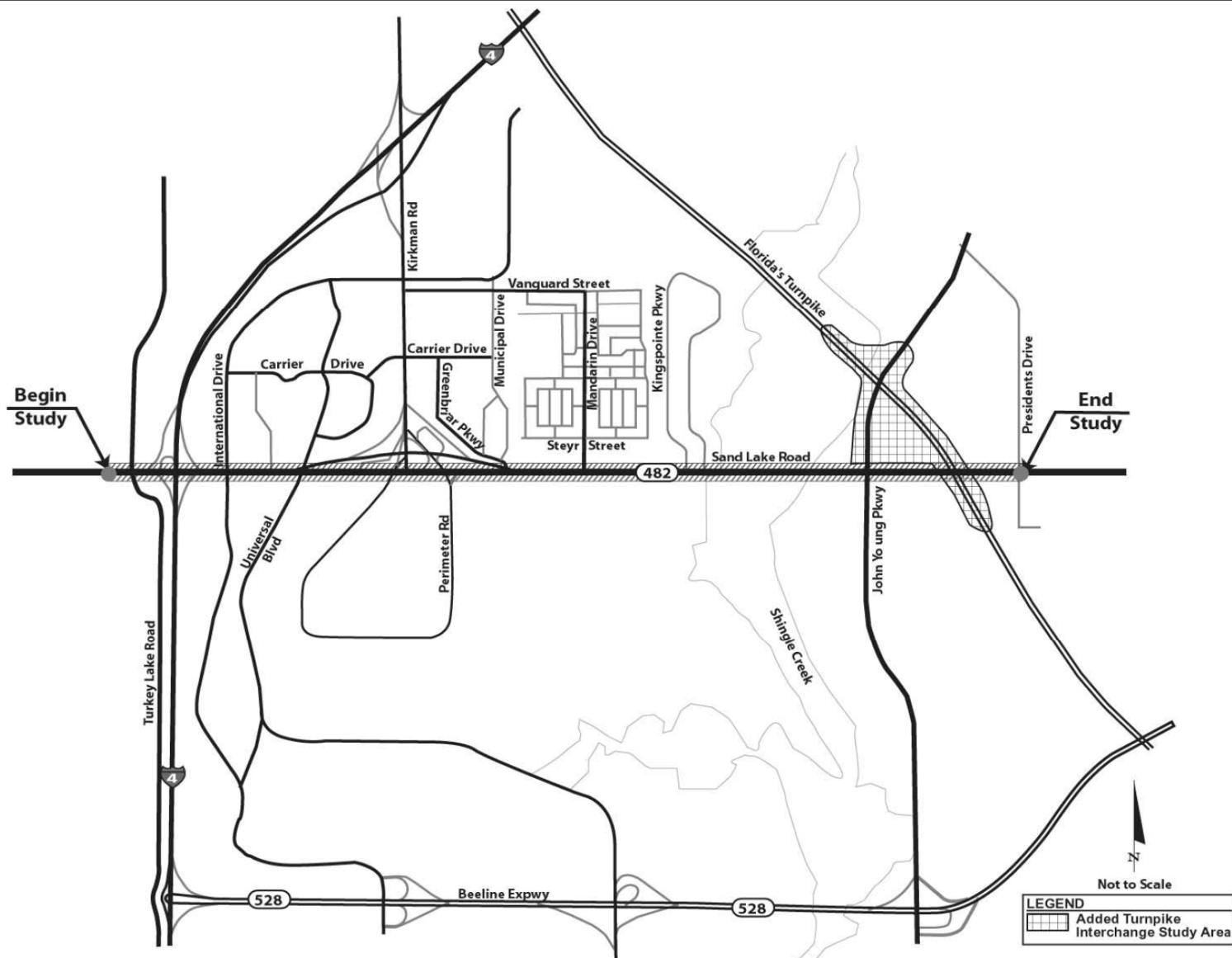
## **2.0 INTRODUCTION**

This Project Development and Environment (PD&E) Study includes two standalone studies that have been combined because of proximity. One study relates to the widening of Sand Lake Road from four lanes to six lanes from west of Turkey Lake Road to Presidents Drive. The second study addresses a new interchange at Florida's Turnpike and Sand Lake Road. This report is divided into two parts to address the two studies. Part I of the report (Sections 3.0 – 6.0) addresses the widening of Sand Lake Road and Part II (Sections 7.0 – 10.0) addresses Florida's Turnpike Interchange with Sand Lake Road.

### **2.1 Project Location and General Description**

The proposed project includes the rehabilitation and widening of Sand Lake Road from approximately 1,600 feet west of Turkey Lake Road to Presidents Drive, a length of approximately four miles. The project is located in Orange County, Florida. The portion of the project from 1,600 feet west of Turkey Lake Road to a point approximately 200 feet east of Turkey Lake Road is within the jurisdiction of Orange County. The remainder of the corridor is under the jurisdiction of the Florida Department of Transportation (FDOT). The study area consists of a mixture of commercial and industrial land uses as well as undeveloped land. The proposed project along Sand Lake Road encompasses 11 major intersections, including Turkey Lake Road, I-4 ramps, International Drive, Universal Boulevard, SR 435 (Kirkman Road), Greenbriar Parkway, Mandarin Drive, Kingspointe Parkway, John Young Parkway and Presidents Drive. The proposed project also includes a new Turnpike interchange with Sand Lake Road. *Figure 2-1* is a project location map illustrating the proximity of the project.

This study specifically excludes improvements to the Sand Lake Road/Kirkman Road interchange beyond those related to widening Sand Lake Road. The Kirkman interchange will be evaluated for major modifications in the future in another study. This study also specifically excludes roadway improvements at the Sand Lake Road intersection with John Young Parkway because Orange County is developing a single point urban interchange at this location under a separate study.



SR 482 PD&E Study  
Project Development Summary Report

Financial Project ID:407143-3-22-01

Project Location Map

Figure  
2-1

Sand Lake Road is predominantly a four-lane divided roadway with two lanes in each direction. However, there are portions of Sand Lake Road that include five-lane and six-lane cross sections. Sand Lake Road consists of six lanes from Turkey Lake Road to International Drive. Six lanes also exist from just west of John Young Parkway to east of John Young Parkway.

Florida's Turnpike Enterprise is currently constructing six lanes on Sand Lake Road across the Turnpike to a point west of President's Drive. This construction will accommodate the full PD&E Study needs on Sand Lake Road in this area except for providing a sidewalk on the south side of the eastbound bridge. The sidewalk is not included in the current construction project. Another construction project (by Orange County) will complete the six-lane segment from east of Florida's Turnpike to Presidents Drive and continue east to SR 441 (Orange Blossom Trail). When these projects are in place, six lanes will be available from west of John Young Parkway to Presidents Drive except for a short segment where restriping will be needed. This restriping could be accomplished by Orange County as part of a planned single point interchange project at John Young Parkway and Sand Lake Road. The project provides for widening of all of the other segments of Sand Lake Road to six lanes and provides additional turn lanes at selected intersections. The proposed interchange provides full access to the Turnpike at Sand Lake Road but access to and from the north will be limited to Sun Pass only. The improvements also include pedestrian, bicycle, and transit accommodations at appropriate locations throughout the project. The proposed improvements will help accommodate projected future traffic along roadway segments, improve operating conditions compared to no build conditions, and promote enhanced safety along the corridor.

## **2.2 Resource Documents (on CDs in back of report)**

A series of documents were developed as a part of this study. These are listed below and are provided on CDs in the back of this report.

- Location Hydraulics Report (*Separate Documents for Sand Lake Road Widening and Turnpike Interchange*)
- Contamination Screening Evaluation Report (*Separate Documents for Sand Lake Road Widening and Turnpike Interchange*)
- Pond Siting Report (*Sand Lake Road Widening Only*)
- Pond Siting Design Memorandum (*Turnpike Interchange Only*)
- Noise Assessment *Sand Lake Road Widening Only*)
- Air Quality Assessment (*Sand Lake Road Widening Only*)
- Lighting Justification Report (*Sand Lake Road Widening Only*)
- Geotechnical Report (*Combined Document for Sand Lake Road Widening and Turnpike Interchange*)
- Cultural Resource Assessment Survey (*Combined Document for Sand Lake Road Widening and Turnpike Interchange*)
- Wetlands Impacts Evaluation (*Combined Document for Sand Lake Road Widening and Turnpike Interchange*)
- Endangered Species Biological Assessment (*Combined Document for Sand Lake Road Widening and Turnpike Interchange*)
- Structural Report (*Combined Document for Sand Lake Road Widening and Turnpike Interchange*)
- Utilities Report (*Combined Document for Sand Lake Road Widening and Turnpike Interchange*)
- Public Hearing Transcript and Summary (*Combined Document for Sand Lake Road Widening and Turnpike Interchange*)
- Public Involvement Report (*Combined Document for Sand Lake Road Widening and Turnpike Interchange*)

# Part I

## Sand Lake Road Widening

### 3.0 RECOMMENDED ALTERNATIVE

#### 3.1 Description of Project by Segment

The project is divided into seven segments due to the unique character of each segment. The segments are identified on *Figure 3-1* and are described in Section 3.1.1. The typical section package is provided in *Appendix B*. Concept plans for the project are provided in *Appendix E*.

*Table 3-1* summarizes the major design criteria for the project. All criteria are subject to change and only current criteria will be used during the final design phase.

##### 3.1.1 Typical Sections

###### 3.1.1.1 Segment 1—Station 4+20 to Station 20+60 (1,600 Feet West of Turkey Lake Road to Turkey Lake Road)

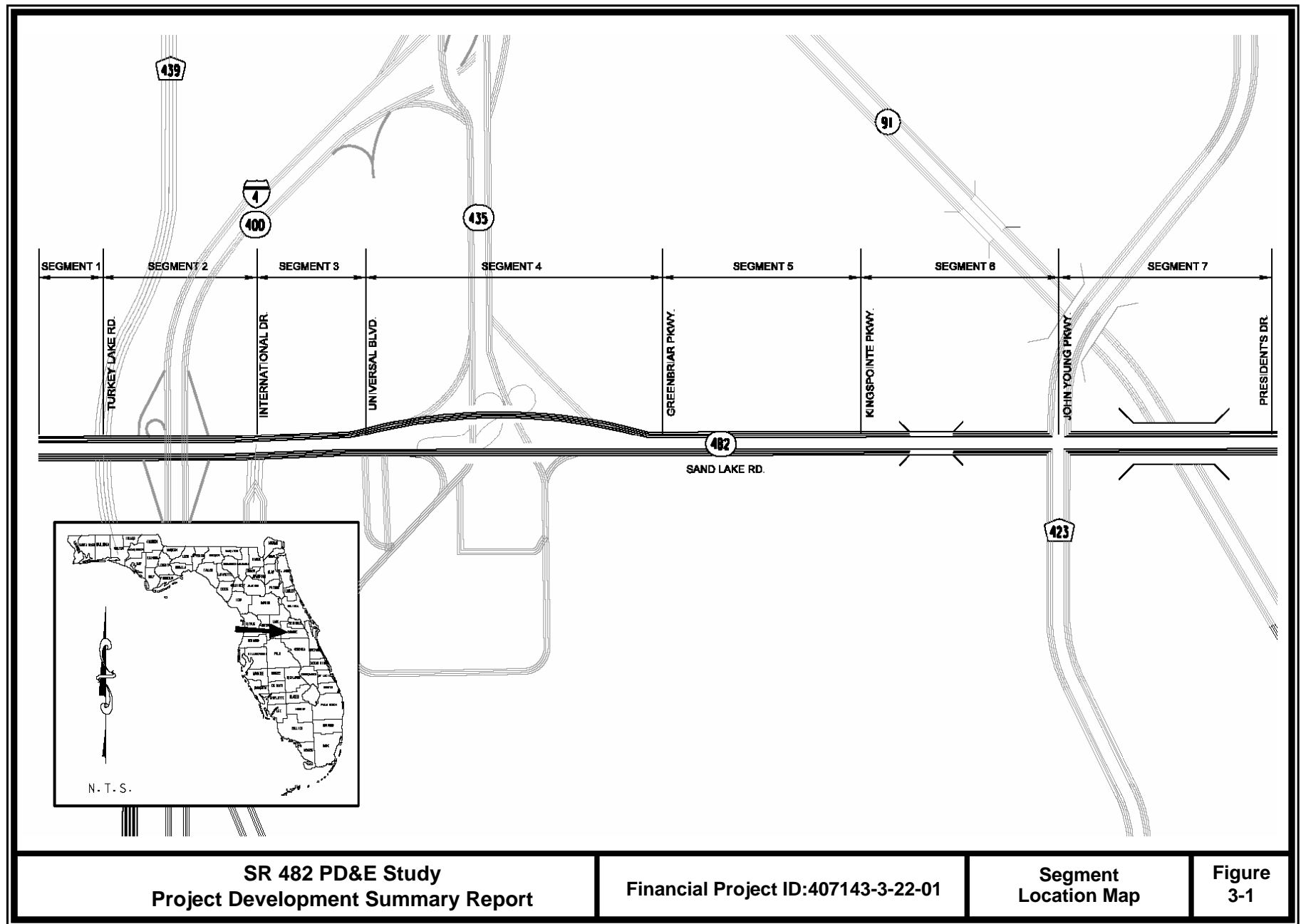
###### Existing

Segment 1A generally consists of a four-lane divided rural principal arterial within 120 feet of right-of-way. Curb and gutter is provided on the south side of the roadway to accommodate a right-turn lane at the Turkey Lake Road intersection. There are two 11-foot eastbound lanes and two 11-foot westbound lanes separated by a 21-foot median. There are no bicycle lanes. A five-foot sidewalk is provided on each side. Near the intersection of Turkey Lake Road, an eastbound through lane and an eastbound right-turn lane are added. The existing typical section is shown in *Figure 3-2*.

###### Recommended

This segment transitions from the existing four-lane section to the proposed six-lane section near the Turkey Lake Road intersection (Station 4+20 to Station 17+00). Beginning at Station 17+00, the typical section provides for a six-lane urban segment within 127.5 feet of right-of-way. This will require 7.5 feet of right-of-way to be acquired on the north side.





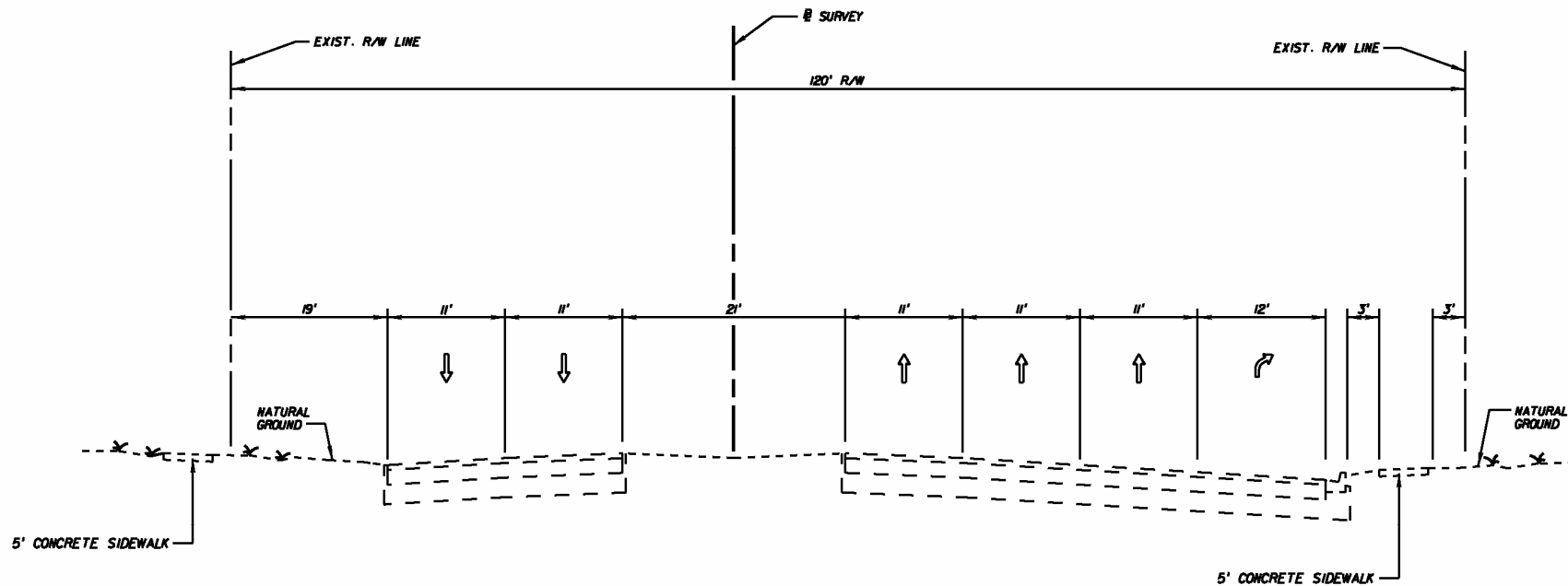
**TABLE 3-1. DESIGN CRITERIA MATRIX**

Design Element	Urban Section 40 MPH Design Speed	Urban Section 45 MPH Design Speed	Urban Section 50 MPH Design Speed	Suburban Section 45 MPH Design Speed	Suburban Section 55 MPH Design Speed	Rural Section 55 MPH Design Speed	Source
<b>Cross Section</b>							
Lane Width	12 ft <sub>3</sub>	12 ft <sub>3</sub>	12 ft <sub>3</sub>	12 ft <sub>3</sub>	12 ft <sub>3</sub>	12 ft <sub>3</sub>	Table 2.1.1 <sub>1</sub>
Bicycle Accommodation	4 ft	4 ft	4 ft	On Shoulder	On Shoulder	On Shoulder	Table 2.1.2 <sub>1</sub>
Clear Zone	4 ft	4 ft	4 ft	24 ft	30 ft	30 ft	Table 2.11.9 <sub>1</sub> Table 2.11.10 <sub>1</sub>
Median Width	22 ft <sub>4</sub>	22 ft <sub>4</sub>	40 ft	22 ft <sub>4</sub>	40 ft	40 ft	Table 2.2.1 <sub>1</sub>
<b>Cross Slope</b>							
Inside Lanes	0.02	0.02	0.02	0.02	0.02	0.02	Figure 2.1.1 <sub>1</sub>
Outside Lanes	0.03	0.03	0.03	0.03	0.03	0.03	Figure 2.1.1 <sub>1</sub>
Outside Shoulder	Does Not Apply	Does Not Apply	Does Not Apply	0.06	0.06	0.06	Table 2.3.2 <sub>1</sub>
Median Shoulder	Does Not Apply	Does Not Apply	Does Not Apply	Does Not Apply	Does Not Apply	0.05	Table 2.3.2 <sub>1</sub>
Shoulder Width (High Volume)	Does Not Apply	Does Not Apply	Does Not Apply	Outside 12 ft (5 ft Paved)	Outside 12 ft (5 ft Paved)	Outside 12 ft (5 ft Paved) Median 12 ft (0 ft Paved)	Table 2.3.2 <sub>1</sub>
Curb and Gutter (Edge)	Type F	Type F	Type F	Does Not Apply	Does Not Apply	Does Not Apply	Index 300 <sub>2</sub>
Curb and Gutter (Median)	Type E	Type E	Type E	Type E	Type E	Does Not Apply	Index 300 <sub>2</sub>
Border Width	10 ft (12 ft) <sub>5</sub>	12 ft (14 ft) <sub>5</sub>	12 ft (14 ft) <sub>5</sub>	33 ft	40 ft	40 ft	Table 2.5.1 <sub>1</sub> Table 2.5.2 <sub>1</sub>
Posted Speed	35 MPH	40 MPH	45 MPH	40 MPH	50 MPH	50 MPH	—
<b>Horizontal Alignment</b>							
Minimum Curve Radius	533 ft	694 ft	881 ft	559 ft	881 ft	881 ft	Table 2.9.1 <sub>1</sub> Table 2.9.2 <sub>1</sub>
Maximum Deflection (No Curve)	2° 00' 00"	1° 00' 00"	1° 00' 00"	0° 45' 00"	0° 45' 00"	0° 45' 00"	Table 2.8.1a <sub>1</sub>
Maximum Superelevation	0.05	0.05	0.05	0.10	0.10	0.10	Table 2.9.1 <sub>1</sub> Table 2.9.2 <sub>1</sub>
<b>Vertical Alignment</b>							
Maximum Grade	7% (Flat Terrain)	6% (Flat Terrain)	6% (Flat Terrain)	5% (Flat Terrain)	3% (Flat Terrain)	3% (Flat Terrain)	Table 2.6.1 <sub>1</sub>
Minimum Grade	0.30%	0.30%	0.30%	Does Not Apply	Does Not Apply	Does Not Apply	Table 2.6.4 <sub>1</sub>
Base Clearance Above Design High Water	1 ft	1 ft	1 ft	3 ft	3 ft	3 ft	Table 2.6.3 <sub>1</sub>
Minimum Stopping Sight Distance	305 ft	360 ft	425 ft	360 ft	495 ft	495 ft	Table 2.7.1 <sub>1</sub>
Vertical Curve K Values	K = 70 (Crest) K = 70 (Sag)	K = 98 (Crest) K = 70 (Sag)	K = 136 (Crest) K = 70 (Sag)	K = 98 (Crest) K = 70 (Sag)	K = 185 (Crest) K = 70 (Sag)	K = 185 (Crest) K = 70 (Sag)	Table 2.8.5 <sub>1</sub> Table 2.8.6 <sub>1</sub>

**Notes:**

- Plans Preparation Manual, 2005, Florida Department of Transportation
- Design Standards for Design, Construction, Maintenance and Utility Operations on the State Highway System, 2004, Florida Department of Transportation
- 11 ft permitted on non-FIHS roads if one of these conditions exist:
  - R/W and existing conditions are stringent controls
  - Facility operates on interrupted flow conditions
  - Design speed 40 mph or less
  - Intersection capacity not adversely affected
  - Truck volume 10% or less
- On reconstruction projects where existing curb locations are fixed due to severe right of way constraints, the minimum width may be reduced to 19.5 ft for 45 mph design speeds and to 15.5 ft for design speeds ≤ 40 mph
- Border width with 5' bike lane (Border width without 5' bike lane)

H:\049013011\_SR 482\PDSR\Table\_3-1\_DesignCriteriaMatrix.xls]Formatted for PDSR



**SEGMENT 1**  
**STA. 4+20 TO STA. 20+60**  
**AT TURKEY LAKE ROAD**  
**45 MPH POSTED SPEED**  
**120' MINIMUM RIGHT-OF-WAY WIDTH**

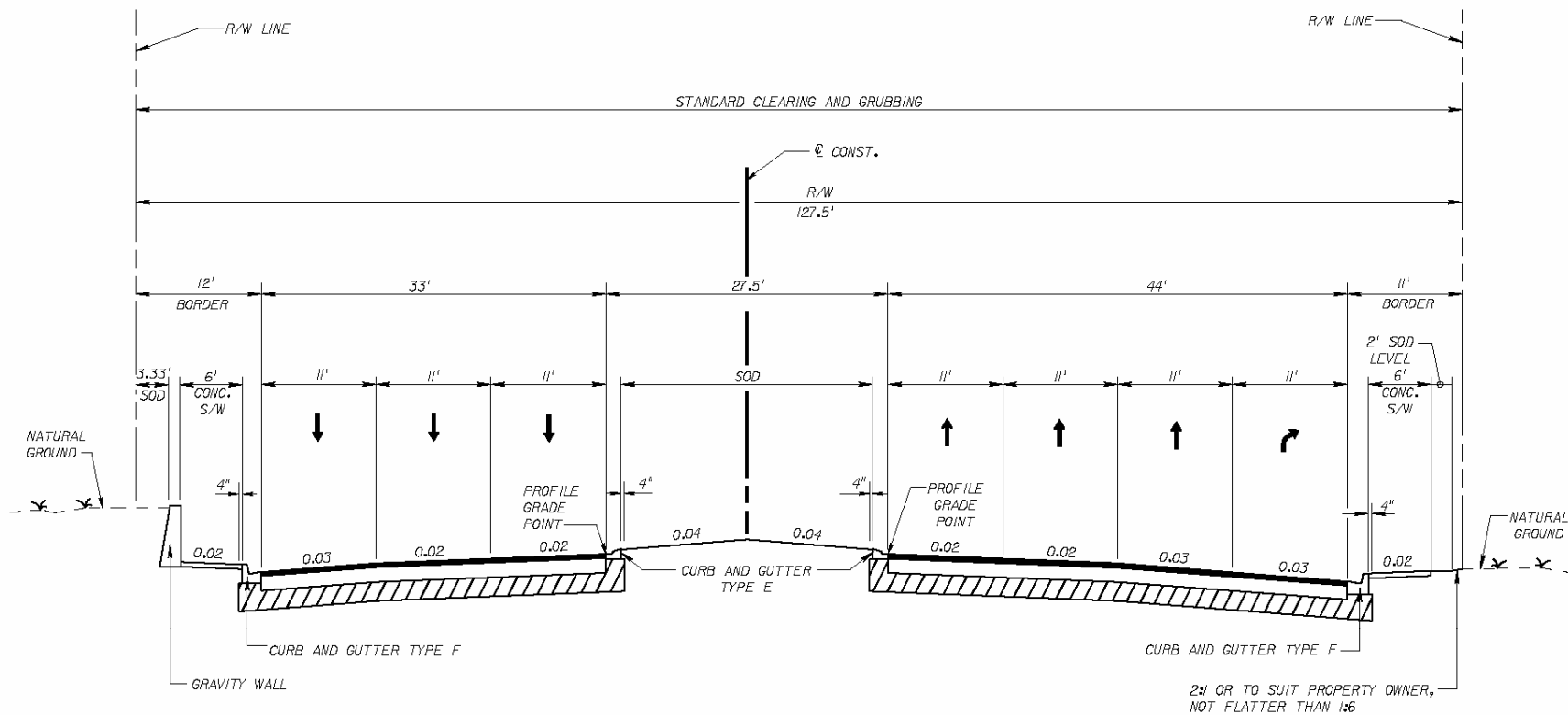
The section includes three 11-foot lanes in both the eastbound and westbound direction separated by a 27.5-foot-wide raised median with a mountable Type E curb and gutter. Two 11-foot left-turn lanes and an 11-foot right-turn lane are also provided.

This segment provides for a Type F curb and gutter and six-foot sidewalks. Gravity walls will be used to harmonize the segment with existing developed property. Construction easements of up to 10 feet will be needed adjacent to retaining walls. Construction easements are preferred to right-of-way acquisition to avoid permanent impacts to existing site development. Drainage for this segment will be accommodated by a closed drainage system to collect runoff. Stormwater will be discharged to an offsite detention pond, or a new exfiltration trench system within the roadway right-of-way to provide water treatment and retention. *Figure 3-3* shows the recommended typical section for Segment 1.

#### 3.1.1.2 Segment 2—Station 20+60 to Station 43+15 (Turkey Lake Road to International Drive)

##### Existing

This is currently a six-lane urban segment. Lane widths vary from 11.8 to 13.8 feet. In addition, two westbound lanes (10.7 feet and 11.0 feet) feed the westbound Sand Lake Road to westbound I-4 loop ramp. The outer lanes become right-turn lanes at Turkey Lake Road and at International Drive. The segment provides for two eastbound left-turn lanes which feed the I-4 eastbound on-ramp. There are no bicycle lanes, but there is an eight-foot-wide sidewalk on the south side of the roadway and a six-foot sidewalk on the north side with curb and gutter on both sides (see *Figure 3-4*). The existing right-of-way ranges from 120 to 145 feet except in the I-4 right-of-way. In that area the section is controlled by the existing I-4 overpass. The available distance between MSE walls is 152.5 feet. This location controls the overall typical section for this segment.



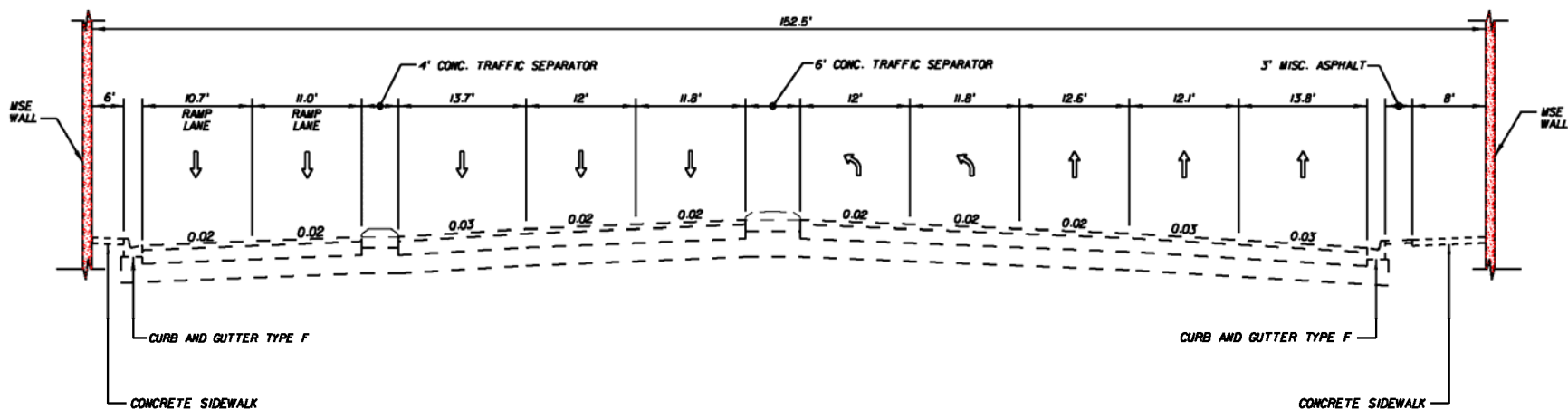
**SEGMENT 1**  
**STA. 4+20 TO STA. 20+60**  
**WEST OF TURKEY LAKE ROAD**  
**40 MPH DESIGN SPEED**

**SR 482 PD&E Study**  
**Project Development Summary Report**

Financial Project ID:407143-3-22-01

**Segment 1**  
**Recommended Typical**  
**Section**

**Figure**  
**3-3**



**SEGMENT 2**  
**LOCATION 32+00**  
**CONTROLS STA. 20+60 TO STA. 43+15**  
**TURKEY LAKE ROAD TO INTERNATIONAL DRIVE**  
**40 MPH POSTED SPEED**  
**RIGHT-OF-WAY WIDTH - N/A (INTERCHANGE)**

**SR 482 PD&E Study**  
**Project Development Summary Report**

**Financial Project ID:407143-3-22-01**

**Segment 2**  
**Existing Typical**  
**Section**

**Figure**  
**3-4**

### Recommended

All lanes in this section will be retained. The loop ramp lanes and separator will remain in place. The curb on the south side will be moved back 5.7 feet and through lanes will be 11 feet wide. Turn lanes will be 11 feet wide except as noted below. The reduced lane widths and curb line adjustment provide for four-foot bike lanes on each side and an added westbound lane to accommodate left-turns at Turkey Lake Road (see *Figure 3-5*). The added lane will be 10.5 feet in width. Dual left-turn lanes and a single right-turn lane will be provided at Turkey Lake Road and at International Drive. A concrete separator will be provided near Turkey Lake Road between the westbound left-turn lanes and the westbound through lanes. An additional lane will be added on the westbound I-4 off ramp to provide access to the left-turn lanes for Turkey Lake Road.

Turn lane improvements will be provided on International Drive north and south of Sand Lake Road. Right-of-way will be needed at the intersections to accommodate the proposed improvements. Stormwater will be accommodated by a closed drainage system and discharged to detention ponds within the Kirkman Road interchange.

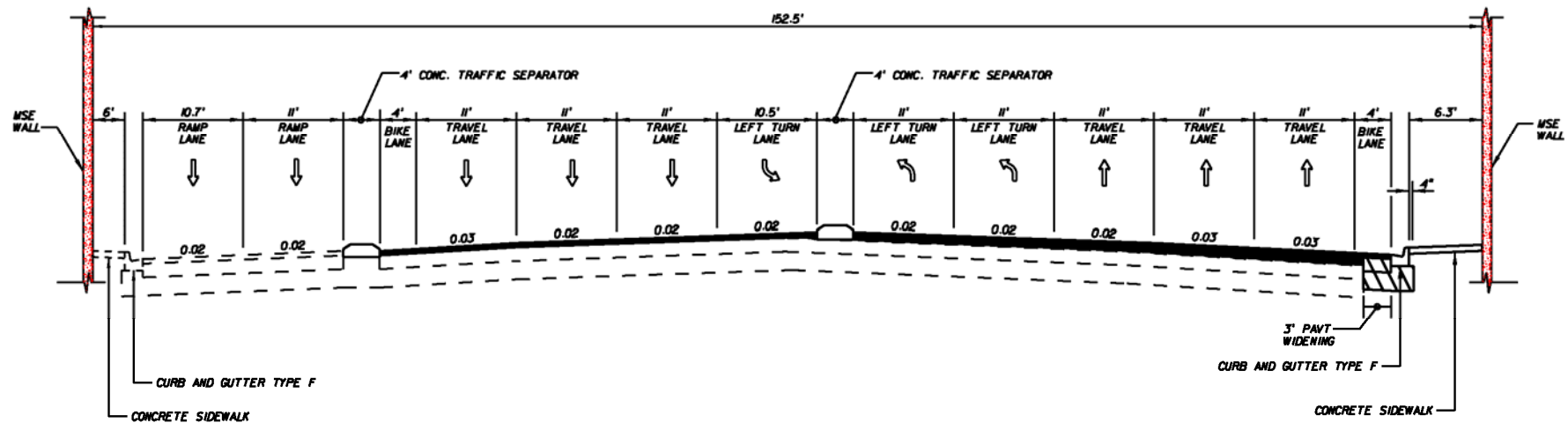
#### 3.1.1.3 Segment 3—Station 43+15 to Station 59+75 (International Drive to Universal Boulevard)

### Existing

This segment currently consists of a four-lane urban divided principal arterial within a right-of-way varying between 94 and 310 feet. The typical right-of-way is 100 feet. There are two 11-foot lanes in both directions separated by a 25.5-foot median. There are four-foot unmarked bicycle lanes and five-foot-wide sidewalks on both sides of the roadway (see *Figure 3-6*). Dual left-turn lanes are provided at International Drive and at Universal Boulevard.

### Recommended

The proposed typical section provides a six-lane urban section within 125.5 feet of right-of-way. It includes three 11-foot lanes in both directions separated by a 27.5-foot-wide raised median with a mountable Type E curb and gutter. This segment provides for a



**SEGMENT 2**  
**LOCATION 32+00**  
**CONTROLS STA. 20+60 TO STA. 43+15**  
**TURKEY LAKE ROAD TO INTERNATIONAL DRIVE**  
**40 MPH DESIGN SPEED**  
**RIGHT-OF-WAY WIDTH - N/A (INTERCHANGE)**

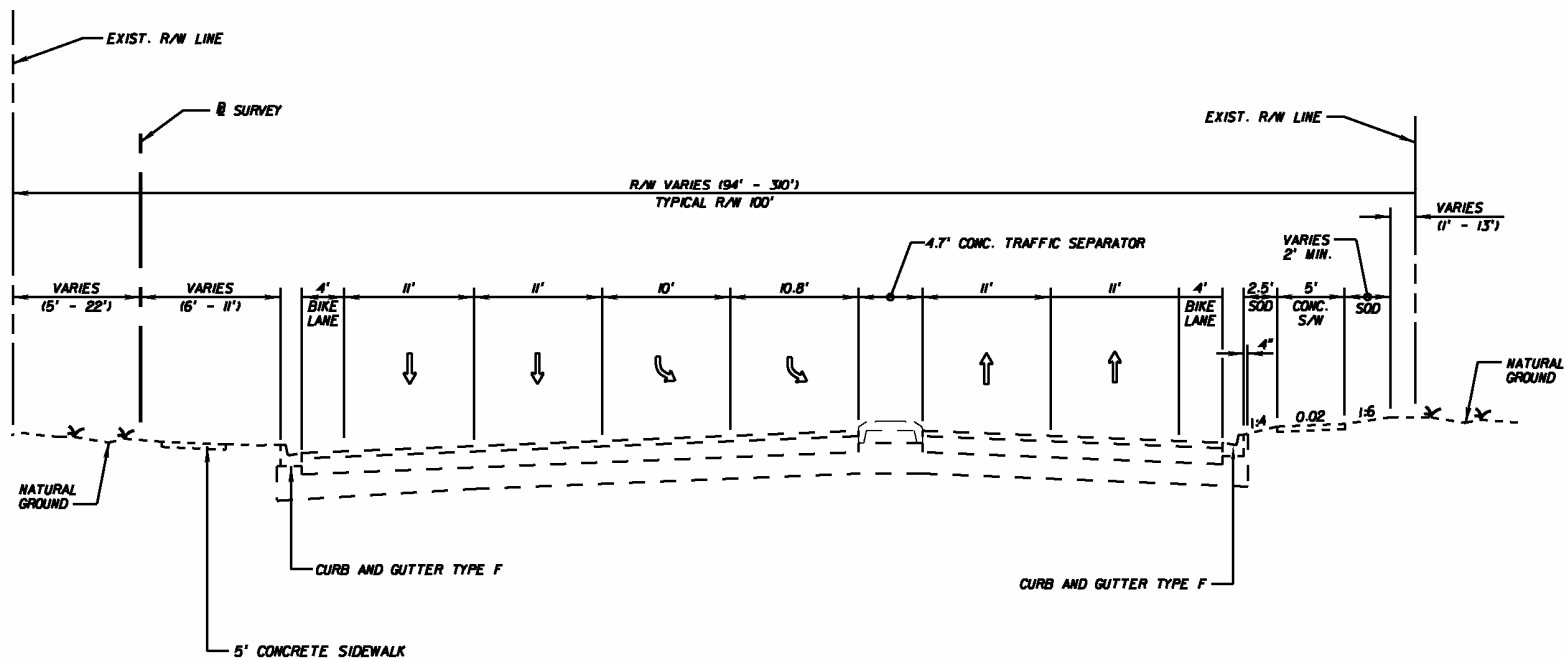
**SR 482 PD&E Study**  
**Project Development Summary Report**

Financial Project ID:407143-3-22-01

**Segment 2**  
**Recommended Typical**  
**Section**

**Figure**  
**3-5**





**SEGMENT 3**  
**CONTROLS STA. 43+15 TO STA. 59+75**  
**INTERNATIONAL DRIVE TO UNIVERSAL BLVD.**  
**40 MPH POSTED SPEED**  
**94' - 310' RIGHT-OF-WAY WIDTH**  
**100' TYPICAL RIGHT-OF-WAY WIDTH**

Type F curb and gutter, four-foot bicycle lanes, and a six-foot sidewalk adjacent to the northern and southern side of the roadway (see *Figure 3-7*). The median accommodates dual left-turn lanes at the intersections with International Drive and Universal Boulevard. Side street improvements will be provided on Universal Boulevard. Drainage for this segment will be accommodated by a closed drainage system and discharged to detention ponds within the Kirkman interchange

Gravity walls will be utilized where necessary to minimize right-of-way impacts.

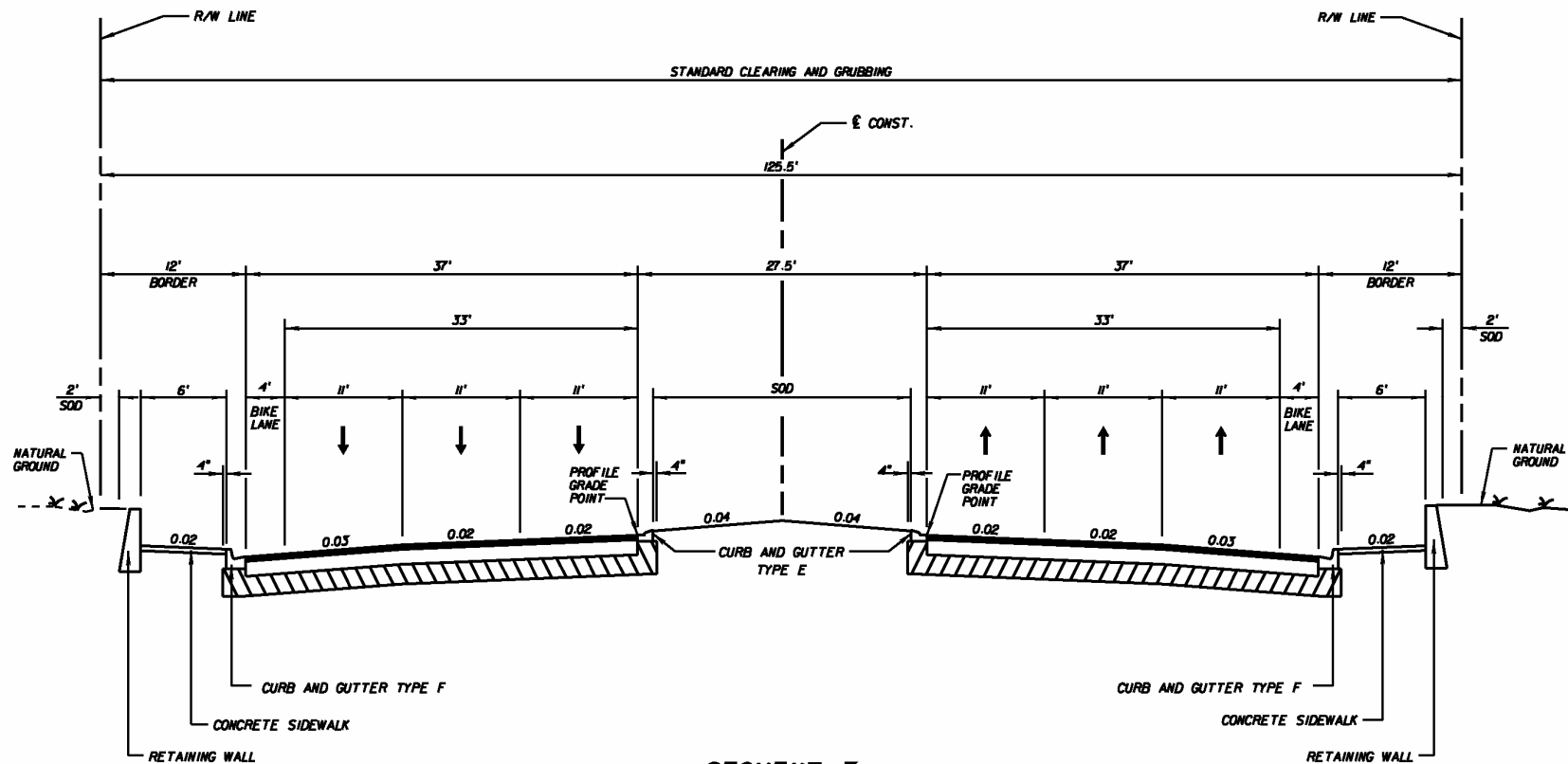
#### 3.1.1.4 Segment 4—Station 59+75 to Station 106+00 (Universal Boulevard to Greenbriar Parkway)

##### Existing

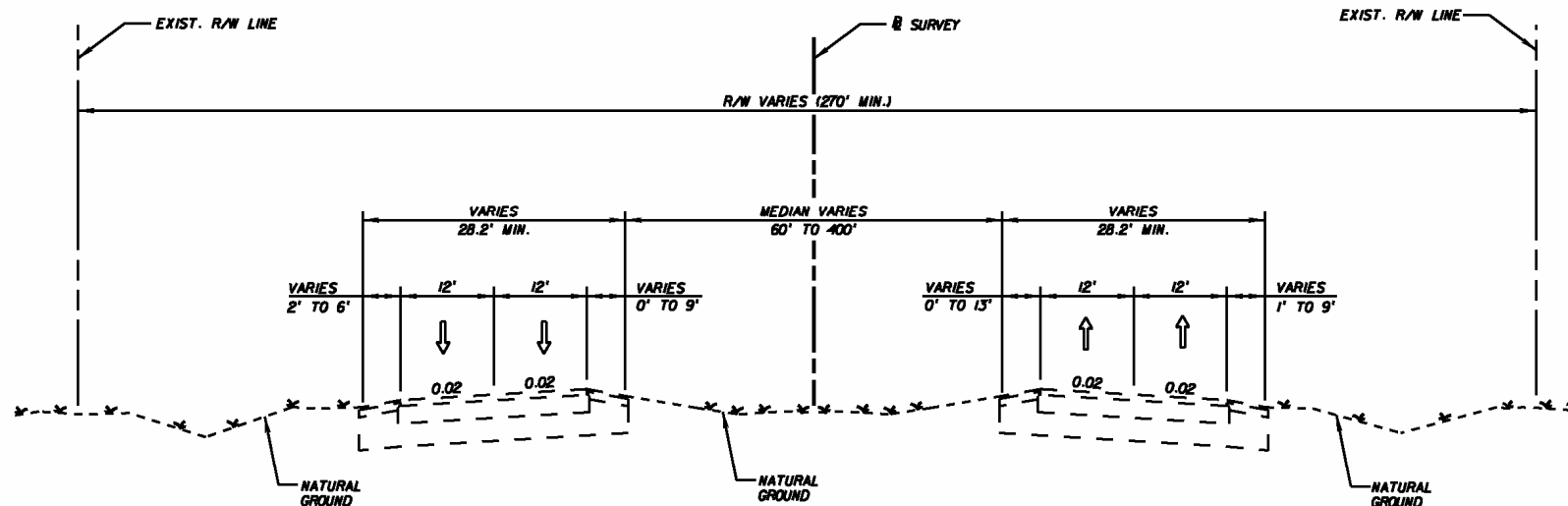
This segment currently consists of a four-lane bifurcated rural principal arterial within a minimum right-of-way of 270 feet. Most of the segment is contained within the Kirkman interchange. This interchange will be upgraded in the future and major modifications are not included in this study. It is anticipated that the interchange improvements will be addressed in a future study. There are two 12-foot lanes in both directions separated by a median varying between 60 and 400 feet (see *Figure 3-8*). There are no bicycle lanes and no sidewalks. Paved shoulders vary in width from zero to 13 feet.

##### Recommended

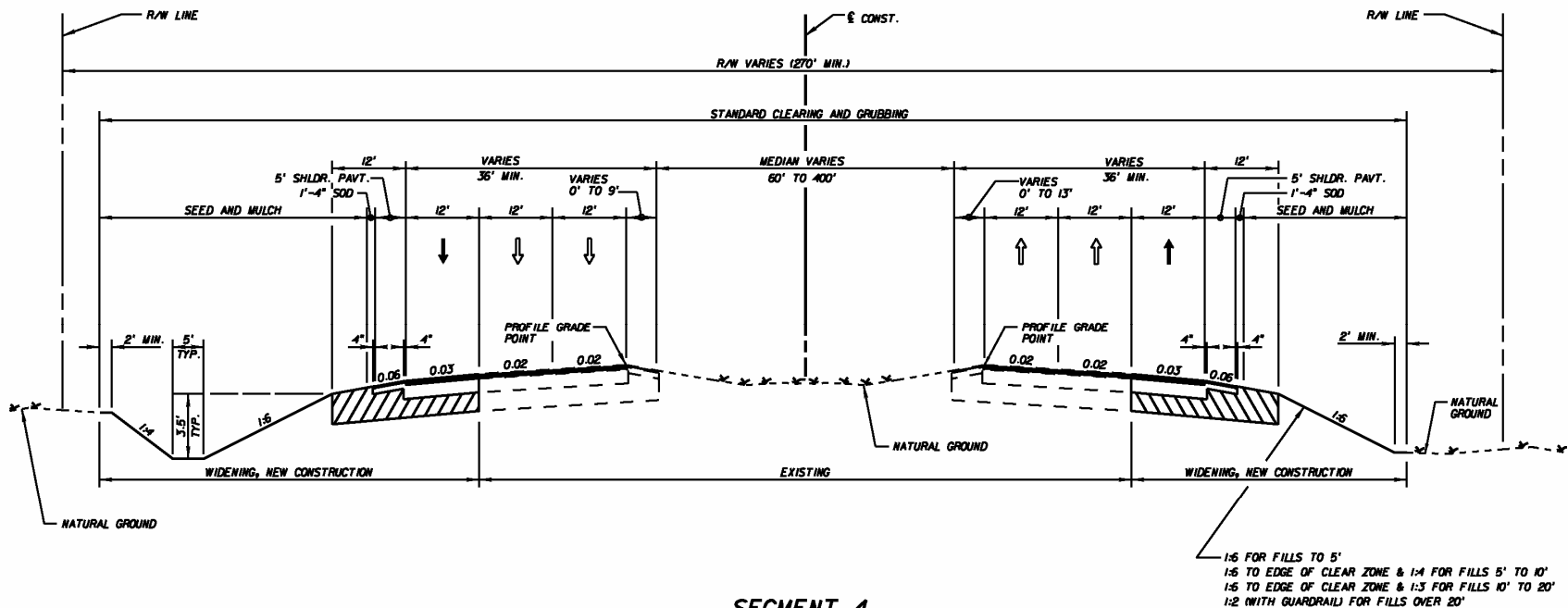
The proposed typical section is a six-lane rural section within a minimum right-of-way of 270 feet. It includes three 12-foot lanes and 12-foot shoulders of which five feet is paved (see *Figure 3-9*). The paved shoulder can accommodate bicycles. Widening will be to the outside. The ramp serving southbound Kirkman Road to westbound Sand Lake Road will be reconstructed to extend the weave area for motorists who use the ramp and desire to travel south on Universal Boulevard. This segment includes roadside swales and a variable width depressed median. Drainage for this segment will be accommodated by an open drainage system with swales to collect runoff. Stormwater will be discharged to



**SEGMENT 3**  
**STA. 43+15 TO STA. 59+75**  
**INTERNATIONAL DRIVE TO UNIVERSAL BLVD.**  
**40 MPH DESIGN SPEED**  
**CONSTRAINED RIGHT-OF-WAY**  
**125.5' MINIMUM RIGHT-OF-WAY WIDTH**



**SEGMENT 4**  
**STA. 59+75 TO STA. 106+00**  
**UNIVERSAL BLVD. TO GREENBRIAR PKWY.**  
**55 MPH POSTED SPEED**  
**RIGHT-OF-WAY WIDTH VARIES IN INTERCHANGE**  
**270' MINIMUM RIGHT-OF-WAY WIDTH**



**SEGMENT 4**  
**STA. 59+75 TO STA. 106+00**  
**UNIVERSAL BLVD. TO GREENBRIAR PKWY.**  
**55 MPH DESIGN SPEED**  
**RIGHT-OF-WAY WIDTH VARIES IN INTERCHANGE**  
**270' MINIMUM RIGHT-OF-WAY WIDTH**

infield onsite detention ponds to provide water treatment and detention. No new right-of-way is required in this segment.

#### 3.1.1.5 Segment 5—Station 106+00 to Station 144+35 (Greenbriar Parkway to Kingspointe Parkway)

##### Existing

This segment currently consists of a four-lane suburban section within a right-of-way width varying between 150 and 270 feet. There are two 12-foot lanes in each direction separated by a median varying between 42 and 46 feet. There are five-foot unmarked bicycle lanes, and Type F curb and gutter on both sides (see *Figure 3-10*).

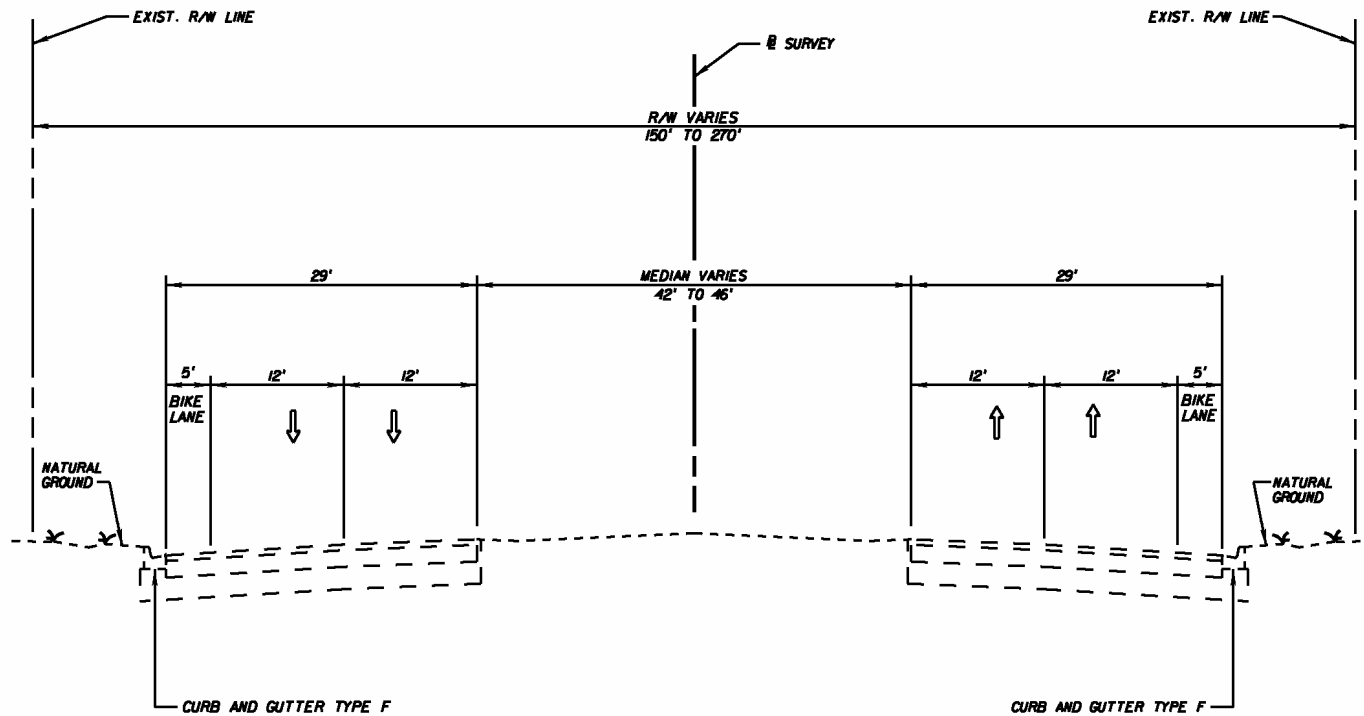
##### Recommended

The recommended typical section is a six-laned urban section within a minimum right-of-way of 150 feet. It includes three 12-foot lanes in each direction separated by a 29.5-foot-wide raised median with a mountable Type E curb and gutter. This segment provides for a Type F curb and gutter. Five-foot sidewalks are provided on both sides. A minimum eight-foot grassed area is provided between the curb and the sidewalk where possible within the existing right-of-way. Four-foot bicycle lanes are included (see *Figure 3-11*). Drainage for this segment will be accommodated by a closed drainage system to collect runoff. Stormwater will be discharged to offsite detention pond 5B to provide water quality treatment and detention. Right-of-way will be required for pond 5B.

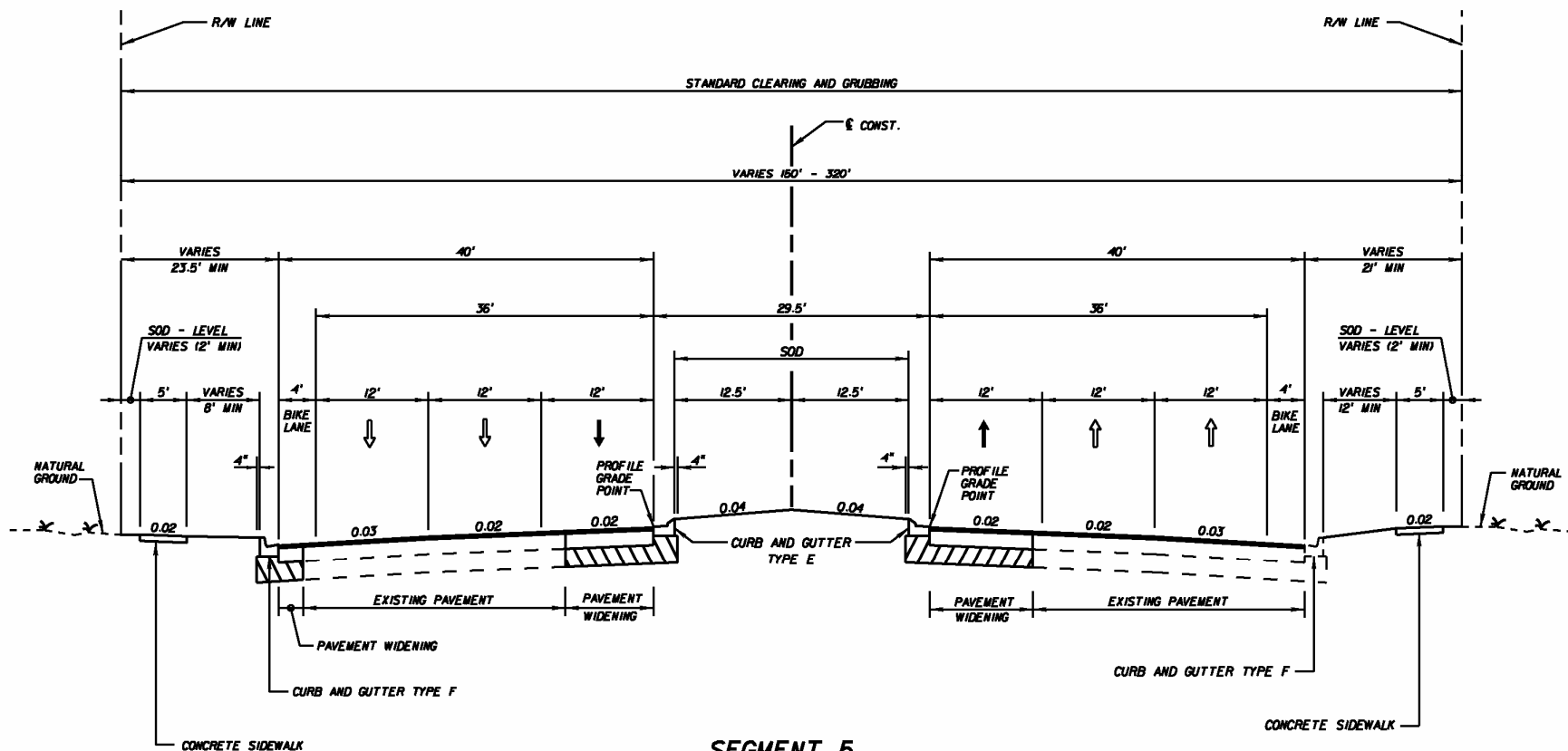
#### 3.1.1.6 Segment 6—Station 144+35 to Station 182+00 (Kingspointe Parkway to West of John Young Parkway)

##### Existing

This segment currently consists of a four-lane rural principal arterial within 250 feet of right-of-way. There are two 12-foot lanes in both the eastbound and westbound direction with 6-foot shoulders, four feet of which are paved. No bicycle lanes or sidewalks are provided (see *Figure 3-12*).

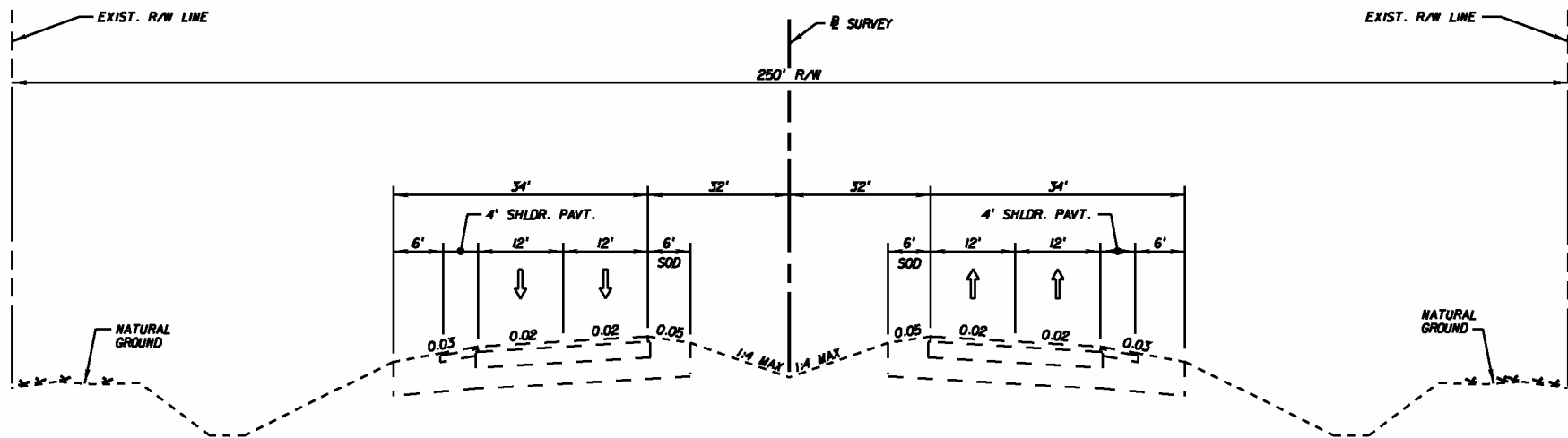


**SEGMENT 5**  
**STA. 106+00 TO STA. 144+35**  
**GREENBRIAR PKWY TO KINGSPONTE PKWY**  
**55 MPH POSTED SPEED**  
**150' - 320' RIGHT-OF-WAY WIDTH**  
**150' TYPICAL RIGHT-OF-WAY WIDTH**



**SEGMENT 5**  
**STA. 106+00 TO STA. 144+35**  
**Greenbriar Pkwy to Kingspointe Pkwy**  
**45 MPH DESIGN SPEED**  
**150' - 320' RIGHT-OF-WAY WIDTH**





**SEGMENT 6**  
**STA. 144+35 TO STA. 172+13**  
**KINGSPORTE PKWY. TO WEST OF JOHN YOUNG PKWY.**  
**55 MPH POSTED SPEED**  
**250' RIGHT-OF-WAY WIDTH**

SR 482 PD&E Study  
 Project Development Summary Report

Financial Project ID:407143-3-22-01

Segment 6  
 Existing Typical  
 Section

Figure  
 3-12

### Recommended

The recommended typical section provides a six-lane rural section within 250 feet of right-of-way. It includes three 12-foot lanes, 12-foot shoulders, five feet of which are paved, and a 40-foot-wide depressed median. This section provides for roadway swales and a minimum sidewalk width of five feet on the south side of the roadway (see *Figure 3-13*). Bicycles will be accommodated on five-foot paved shoulders. A 5-foot wide sidewalk will be provided on the north side from Kingspointe Parkway to the Shingle Creek Trail. A 12-foot sidewalk will be provided from the trail to the Shingle Creek bridge. The Shingle Creek bridge will provide a 14-foot sidewalk on the north side; and, it will connect to a 14-foot wide switchback ramp to serve the Shingle Creek Trail. The twin bridges over Shingle Creek will be reconstructed. The trail will be 12-feet wide under the bridges.

Drainage for this segment will be accommodated by an open drainage system with swales to collect runoff. The swales will provide some stormwater treatment prior to discharging to Shingle Creek. Compensating treatment will be provided in Pond 5B for the untreated stormwater in this segment.

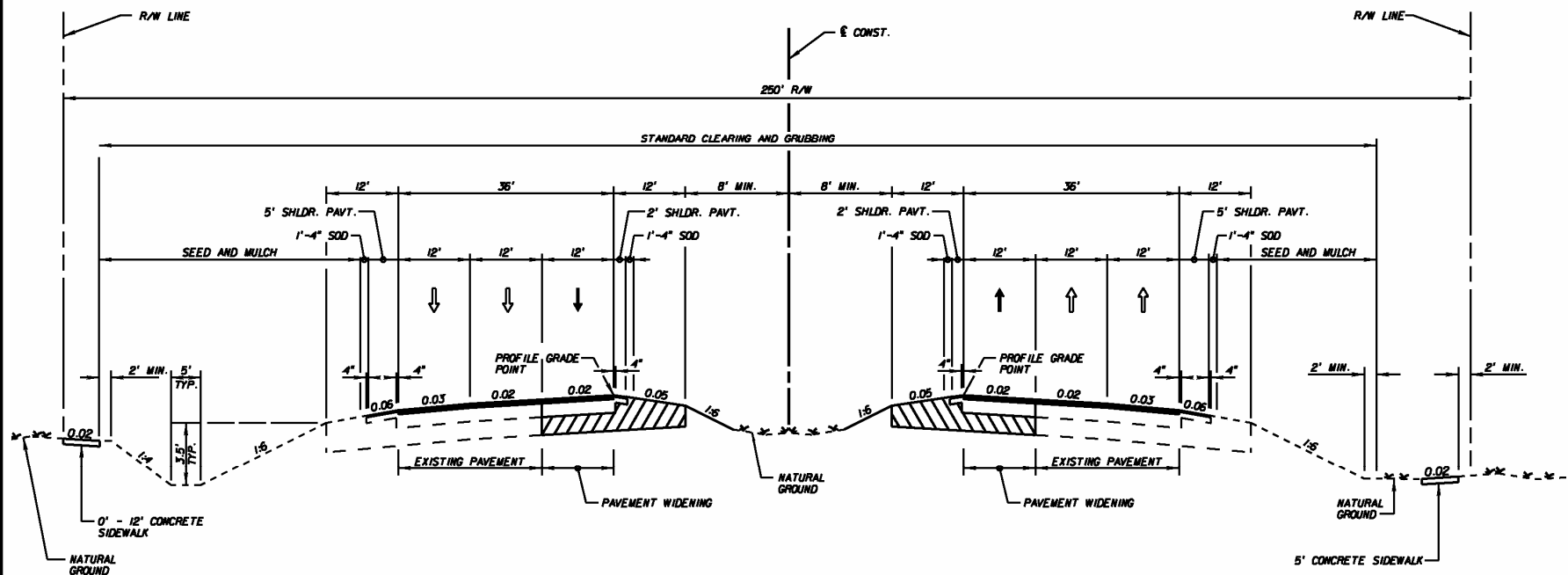
#### 3.1.1.7 Segment 7—Station 182+00 to Station 218+00 (West of John Young Parkway to Presidents Drive)

### Existing

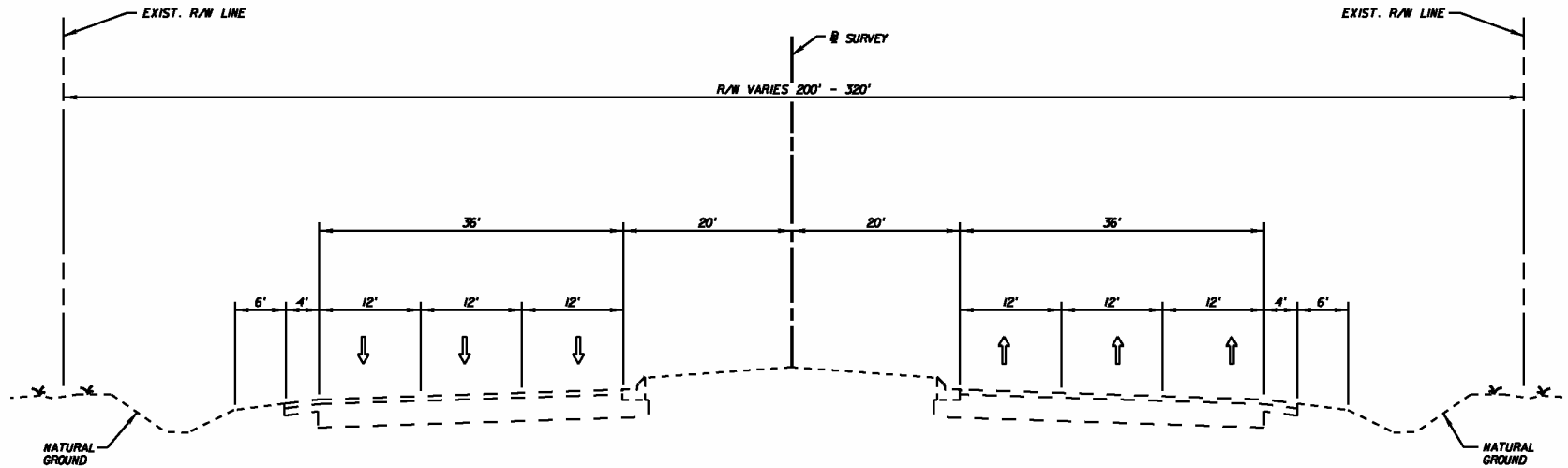
Upon completion of current construction by Florida's Turnpike, this segment will generally consist of a six-lane rural principal arterial within 200 to 320 feet of right-of-way. There are three 12-foot lanes and 10-foot shoulders, four feet of which are paved, in both directions. No sidewalks are provided. Bicycles can be accommodated on paved shoulders (see *Figure 3-14*).

### Recommended

This segment will already be six-laned except for a limit area which is located 1,900 feet west of Florida's Turnpike. This area will be resurfaced and restriped to six lanes. A



**SEGMENT 6**  
**STA. 144+35 TO STA. 172+13**  
**KINGSPORTE PKWY. TO WEST OF JOHN YOUNG PKWY.**  
**55 MPH DESIGN SPEED**  
**250' RIGHT-OF-WAY WIDTH**



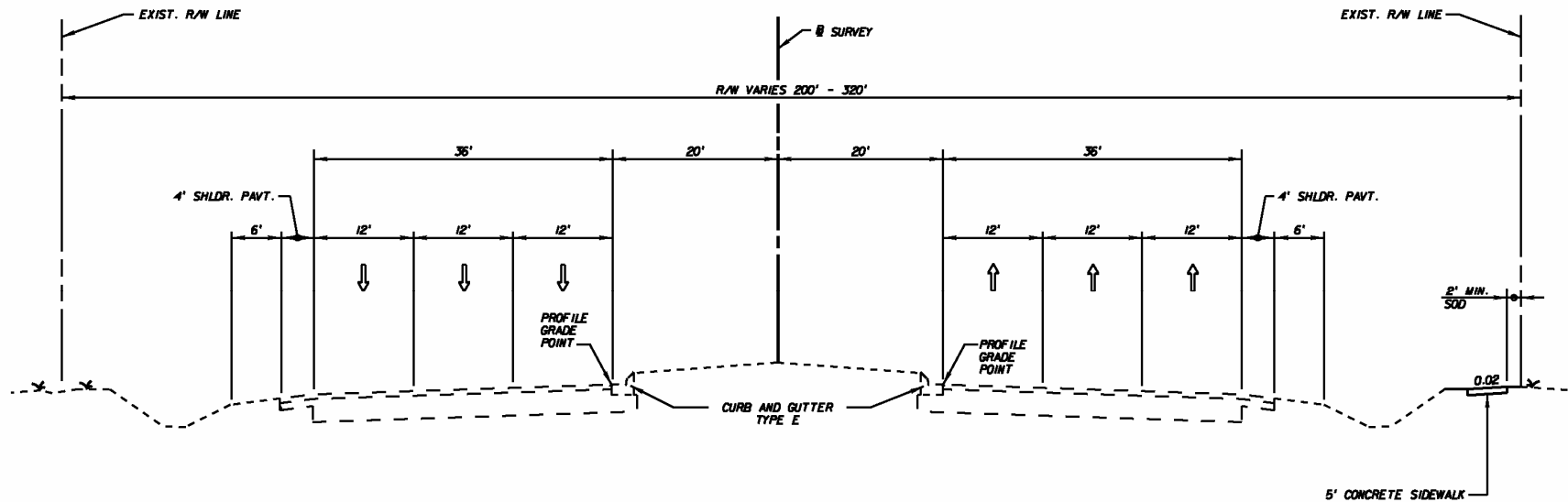
**SEGMENT 7**  
**STA. 172+13 TO STA. 218+00**  
**WEST OF JOHN YOUNG PKWY. TO PRESIDENTS DR.**  
**45 MPH POSTED SPEED**  
**200' - 320' RIGHT-OF-WAY WIDTH**

second left-turn lane will be provided on the eastbound approach to Presidents Drive. Side street improvements will be provided on Presidents Drive. A five-foot sidewalk is proposed on the south side of the roadway (see *Figure 3-15*). No ponds are anticipated.

### 3.2 Design Criteria and Speed

Design and construction criteria for the proposed improvements will adhere to FDOT standards for the design of such roadways and will comply with recommended standard practices as set forth in the following documents:

- *Plans Preparation Manual*, FDOT
- *Manual on Uniform Minimum Standards for Design, Construction and Maintenance for Streets and Highways*, State of Florida
- *A Policy on Geometric Design of Highways and Streets*, AASHTO  
*A Policy on the Design of Urban Highways and Arterial Streets*, AASHTO
- *Drainage Manual*, FDOT
- *Manual on Uniform Traffic Control Devices*, Federal Highway Administration
- *Roadway and Traffic Design Standards*, FDOT
- *Highway Capacity Manual*, Transportation Research Board
- *Design Traffic Handbook*, FDOT
- *Level of Service Handbook*, FDOT
- *Structures Manual*, FDOT
- *Design Standards for Design, Construction, Maintenance and Utility Operations on the State Highway System*, FDOT
- *FDOT Standard Specifications for Road and Bridge Construction*
- *AASHTO Standard Specifications for Highway Bridges*



**SEGMENT 7**  
**STA. 172+13 TO STA. 218+00**  
**WEST OF JOHN YOUNG PKWY. TO PRESIDENTS DR.**  
**45 MPH DESIGN SPEED**  
**200' - 320' RIGHT-OF-WAY WIDTH**

**SR 482 PD&E Study**  
**Project Development Summary Report**

**Financial Project ID:407143-3-22-01**

**Segment 7**  
**Recommended Typical**  
**Section**

**Figure**  
**3-15**

### 3.2.1 Design Exceptions

Design exceptions will be needed for three of the Sand Lake Road bridges over interchange ramps and the access roads to Lockheed Martin south of the current terminus of Kirkman Road.

- Bridge No. 750044 (westbound over southbound access roadway and southbound to eastbound ramp). This bridge has existing clearances of 15'-6" and 15'-5" over the roadway and ramp respectively.
- Bridge No. 750144 (westbound over northbound access roadway and eastbound to northbound ramp). This bridge has a clearance of 15'-3" over the access roadway and 16'-5" over the ramp.
- Bridge #750143 (eastbound over northbound access roadway). This bridge has a clearance of 15'-10."

The bridges function as a part of an interchange which will undergo significant reconstruction in the future. Major interchange modifications are not part of this PD&E Study. These modifications are expected to occur in conjunction with the extension of Kirkman Road to the south. The ramps and roadways under Bridge No. 750044 are expected to be relocated. No damage to the low member of this structure has been observed.

There is another bridge (Bridge No. 750045) south of Bridge No. 750144. It serves the westbound to southbound access to Lockheed Martin. This bridge has a clearance of 14'-10" over the northbound access road and 15'-5" over the eastbound to northbound ramp. It is not being altered by this widening project. This bridge does show damage to its low member over the northbound access roadway. Since it is lower than Bridge 750144 it prevents hits to that bridge.

Consideration was given to lowering existing roadways and ramps. Existing groundwater would allow lowering of the roads and ramps by up to 9" to achieve a 16'-0" clearance

on the mainline bridges. However, the cost would be over \$1 million and would be a temporary investment given future changes in the interchange configuration. Further, the access roads serve a private secure site which has a greater ability to control or monitor vehicle height. For these reasons the Department has determined that design exceptions should be provided. The exceptions will be for 0.47' on Bridge No. 750044, 0.80' on Bridge No. 750144, and 0.15' on Bridge No. 750143.

### 3.2.2 Design Variations

There were no design variations identified in this study.

## 3.3 **Horizontal Alignment Features**

The proposed alignment for Sand Lake Road generally follows the existing alignment. *Table 3-2* lists the horizontal curve data used. The only area requiring super elevation would occur from just west of Universal Boulevard to Greenbriar Parkway for the westbound movement. There are also two intersections that include an angle of deflection. Both of which adhere to FDOT standards. The first is a 2<sup>0</sup>21' deflection for eastbound traffic at the Turkey Lake Road intersection. The second occurs at International Drive for northbound and southbound traffic. The greatest deflection here is 3<sup>0</sup>.



**TABLE 3-2. HORIZONTAL CURVE DATA**

Station to Station	R*	D	e	Design Speed
22+33.41 to 26+93.69	11986.25'	0°28'40.85"	(+) 0.020	40 mph
33+05.12 to 37+21.96	6686.25'	0°51'24.91"	(+) 0.020	40 mph
37+21.96 to 45+08.99	16013.75'	0°21'28.05"	(+) 0.020	40 mph
51+23.89 to 56+09.94	7450.25'	0°46'08.56"	(+) 0.020	40 mph
56+09.94 to 61+05.94	7550.00'	0°45'31.98"	(+) 0.020	40 mph
61+05.94 to 66+44.39	17026.75'	0°20'11.42"	(+) 0.020	55 mph
66+44.39 to 71+20.38	16973.25'	0°20'15.23"	(+) 0.020	45 mph
102+34.53 to 106+45.02	3750.75'	1°31'39.29"	(+) 0.020	45 mph
106+45.02 to 110+58.72	3649.25'	1°34'12.25"	(+) 0.020	45 mph
135+83.68 to 142+93.33	10000.25'	0°34'22.60"	(+) 0.020	45 mph
145+95.02 to 152+17.60	9097.25'	0°37'47.33"	(+) 0.020	45 mph
*Based off from the centerline of construction.				
Station to Station	R**	D	e	Design Speed
51+34.44 to 64+52.58	6000.00'	0°57'17.75"	(+) 0.025	55 mph
71+48.29 to 98+47.70	5740.00'	0°59'53.46"	(-) 0.025	55 mph
104+11.88 to 116+70.88	5000.00'	1°08'28.05"	(+) 0.029	55 mph
**Based off from the inside edge of pavement along westbound Sand Lake Road.				

### 3.4 Vertical Alignment Features

All current vertical alignment can be retained for the proposed vertical geometry except at two locations.

The first location is between International Drive and Universal Boulevard. In this segment, widening is planned approximately 15.5 feet to the north and 10 feet to the south within the proposed right-of-way envelope. The expansion to the south would increase the grade of the west driveway at the Wyndham Resort, and could create an unacceptable condition based on the design criteria outlined in Index 515 for turn out profile connections. In addition, the use of walls, as shown in the typical section for this segment, requires added right-of-way. Raising the grade of the roadway in this segment

could reduce or eliminate the gravity walls. Elimination of the walls could reduce the right-of-way by four feet and eliminate construction easements. Careful coordination with property owners in this segment should occur early in the design phase. See applicable correspondence in *Appendix C*.

The other location where the existing vertical geometry is proposed to be changed is at the Shingle Creek bridge. The bridge and roadway elevation here will be determined by the requirements of the proposed Shingle Creek Bike Trail. The proposed alignment of the Shingle Creek Trail approaches the bridge from the west and crosses over Shingle Creek on the north bridge structure. It proceeds down a switchback at 5% grade compliant with the Americans with Disabilities Act of 1990 (ADA) and crosses under the bridge structure on the eastern bank of Shingle Creek. The trail elevation under the bridge structures is set to be approximately two feet above natural ground, which is slightly below the 10 year flood elevation of Shingle Creek. The clearance from the finished trail elevation to the bottom of the proposed beam will be 8 feet. This will necessitate raising the proposed bridge profile approximately 9 feet. It is noteworthy that the bridge profile would need to be raised six feet to accommodate the 100 year flood requirements so the elevation is only being raised an additional three feet to accommodate the trail. To achieve the necessary increase in elevation, a three vertical curve arrangement will be used. The alignment will include two sag parabolic curves and one crest curve, to elevate the bridge to a sufficient height. The crest and sag vertical curves need to meet a 60 mile per hour (mph) design speed criteria. A retaining wall will be necessary to stabilize the required embankments while avoiding impacts to adjacent wetlands and floodplains within the existing right-of-way.

### **3.5 Lighting**

Lighting currently exists from the west end of the project to International Drive. In addition, lighting is currently provided on Turkey Lake Road, Universal Boulevard, and President's Drive. Lighting should be retained in these areas.

A Lighting Justification Report was undertaken to address lighting in the remainder of the corridor. The analysis considered two lighting segments. Segment 1 extends from International Drive to Universal Boulevard. Segment 2 includes the remainder of the project easterly to Presidents Drive. The Lighting Justification Study recognizes that lighting would be beneficial for both segments due to the forecast significant increase in traffic volumes. Lighting would be especially beneficial in Segment 1 due to the higher pedestrian activity in that segment. The study considered NCHRP Report 152, Warrants for Highway Lighting, and the benefit cost ratio for lighting each segment. The NCHRP warrants consider various features and conditions and assign values to these conditions. A point total of 85 is required to meet the minimum warrant. In addition, when the night to day crash ratio exceeds 2.0 lighting should be considered. Finally, when the benefit to cost ratio exceeds 2.0, the lighting is considered to be beneficial.

Segment 1 has a warrant value of 81.9 and Segment 2 has a value of 66.5. Both segments fall below the warranting value of 85. Thus neither section purely warrants lighting based on this criterion. The night to day crash ration is 5.5 and 2.2 for segments 1 and 2 respectively. Both segments exceed the warranting criterion of 2.0. Given the accident experience in Segment 1, a cost benefit ratio of 16.7 can be achieved by providing lighting. The benefit cost ratio for segment 2 is much lower at 2.3.

Segment 1 is slightly below the warranting criterion of 85 points but it has a very large night to day crash ratio and benefit-cost ratio. Thus lighting is recommended in Segment 1 as a part of the initial project construction.

Segment 2 is well below the warranting point total of 85 points and is marginally above the night time to day time crash ratio criterion of 2.0. In addition, Segment 2 is slightly above the benefit-cost ratio criterion of 2.0. The character of Segment 2 is significantly different from Segment 1 in that much of Segment 2 is undeveloped. Much of the undeveloped area is environmentally sensitive and will not be developed. The interchange at Kirkman Road will be modified in the future and a single point diamond interchange will be developed at John Young Parkway. A new interchange will also be

provided at Florida's Turnpike. Given all these considerations, lighting should be deferred in Segment 2 and considered as appropriate in the future as a part of the development of the noted interchanges.

The Lighting Justification Report is provided on CD.

### 3.6 Right of Way

Existing right-of-way information was obtained from maps provided by the FDOT. The existing right-of-way limits along Sand Lake Road vary from a 150-foot minimum to a 370-foot maximum. *Table 3-3* summarizes right-of-way widths for each segment along the project corridor for both existing conditions and the recommended alternative. Additional right of way is needed at certain intersections. A total of 6.4 acres of right-of-way for ponds and 2.6 acres of right-of-way and easements for widening will be required. A total of 41 parcels will be impacted. Turkey Lake Road side street improvements which are not included in the initial construction project require 0.34 acres from three parcels. Right-of-way is discussed in detail for individual segments in Section 3.1.1 and right-of-way additions are reflected on the concept plans in *Appendix E*.

**TABLE 3-3. EXISTING AND PROPOSED RIGHT-OF-WAY**

Segment No.	Station to Station	Description	Existing Right-of-Way	Right-of-Way Requirements for Preferred Alternative*
1	4+20.00 to 20+60.00	1,600 Feet West of CR 439 (Turkey Lake Road) to CR 439 (Turkey Lake Road)	Generally 120 feet	127.5 feet <sup>(1)</sup>
2	20+60.00 to 43+15.00	CR 439 (Turkey Lake Road) to International Drive	120 - 145 feet	145 - 157 feet
3	43+15.00 to 59+75.00	International Drive to Universal Boulevard	94 - 310 feet	125.5 feet
4	59+75.00 to 106+00.00	Universal Boulevard to Greenbriar Parkway	Varies with minimum of 270 feet	Varies with minimum of 270 feet
5	106+00.00 to 144+35.00	Greenbriar Parkway to Kingspointe Parkway	150 - 370 feet	150 feet
6	144+35.00 to 182+00.00	Kingspointe Parkway to West of SR 423 (John Young Parkway)	250 feet	250 feet
7	182+00.00 to 218+00.00	West of SR 423 (John Young Parkway) to Presidents Drive	200 - 320 feet	200 - 320 feet

\*Note: Right-of-way is also required for intersection improvements; see concept plans in Appendix B.

<sup>(1)</sup> Full right-of-way Station 17+00 to 20+60. Reduced right-of-way Station 4+20 to 17+00.

### 3.7 Construction Easements

Construction easements may be required for installation of gravity walls and to harmonize roadway widening with adjacent properties. The first area where this occurs is located near Sta. 19+00 in front of Chevron and Chick-Fil-A. The gravity wall is needed due to elevation variations and the need to reduce right-of-way impacts.. In order to construct the wall, a temporary construction easement (TCE) will need to be obtained. A TCE may also be required along the north and south side of Sand Lake Road from International Drive to Universal Blvd. where additional retaining walls are likely.

### 3.8 Access Management

Segments 1 through 3 of Sand Lake Road are classified as Access Management Class 5. The remaining segments are classified as Class 3. In general, access management along the corridor is good and median openings are generally spaced appropriately. However, some median access modifications will be accomplished as a part of the six-laning project. Proposed access changes have been reviewed and approved by FDOT Traffic Operations.

#### Approximate Station 38 (Between I-4 and International Drive)

An existing full median opening will be modified to provide for a directional opening serving eastbound lefts only. Modifying this existing opening is also necessary to provide sufficient storage space for the dual left-turn lanes at International Drive. Furthermore, there is a misalignment of the north and south approaches. The south approach alignment requires drivers turning from Sand Lake Road in the westbound direction to travel in the wrong direction to maneuver into the roadway. This creates a hazardous condition. The directional median opening will eliminate southbound left-turns. This movement will be made either by a right-turn out of the driveway and a U-turn at Turkey Lake Road or by accessing International Drive directly from the individual sites. The westbound left-turn will be accommodated by right-turns into the area from International Drive. Northbound left-turns out will be made by right-turns out on International Drive and U-turns at Jamaican Court, which is a signalized intersection. Left-turns would then be made onto Sand Lake Road from International Drive.

### International Drive South Approach

Due to the dual left-turn lanes provided on the northbound leg of International Drive, a median separator is provided. Left-turns into the property west of International Drive will be made by a new directional opening located just north of Jamaican Court. Left-turns from this property will be made via a right-turn and U-turns at Jamaican Court. Left-turns into the property east of International Drive can be made by right-turns from Sand Lake Road or by U-turns at Jamaican Court and then right-turns from International Drive. Left-turns out of the site can be accomplished by turning right on Sand Lake Road and right on Universal Boulevard or U-turning at Universal Boulevard and left-turning back onto International Drive.

### Approximate Station 51 (International Drive to Universal Boulevard)

A full median opening exists at Canada Drive. This will be replaced with a directional opening. Canada Drive has access to International Drive north of Sand Lake Road. This will accommodate southbound left-turns from Canada Drive. Northbound left-turns will be made by a right-turn onto Sand Lake Road and a U-turn at Universal Boulevard. A wider pavement apron has been provided to accommodate larger vehicles which may need to make the U-turn maneuver.

### Approximate Station 63 (Just East of Universal Boulevard)

The median opening in this location will be closed, as it is currently too close to Universal Boulevard and is not consistent with current access management criteria.

### Approximate Station 105 (Greenbriar Parkway)

This intersection is designed to be maintained as an unsignalized location or as a signalized location as traffic demands may warrant. Access to the property south of Sand Lake Road should not be provided at this location. Right-turn in/right-turn out access to the property south of Sand Lake Road can be accommodated so that it does not conflict with future signalization of the southbound left-turn maneuver at the eastbound roadway and so it does not require signalization.

#### Approximate Station 115 (Greenbriar Parkway to Mandarin Drive)

A directional median opening is provided in this location to serve property north and south of Sand Lake Road. It will be necessary to adjust driveways for the site north of Sand Lake Road. It was not possible to align the directional opening with either driveway and provide the necessary access to the south side of the road as well. The existing adjacent median opening will be closed.

#### Approximate Stations 144 and 149 (Kingspointe Parkway West and East)

The current operation at the Kingspointe Parkway access points will be reversed with the signal located at the east intersection instead of the west intersection. The west intersection will operate under shadow of the signal of the upstream signalized intersection.

#### Approximate Station 167

This opening will be in the vertical curve of the new Shingle Creek bridge and serves no property access. The opening will be closed.

### **3.9 Structures**

The corridor includes nine existing bridge structures within the study area. These bridges are located within three distinct areas of the project. These three areas include the Sand Lake Road /SR 435 (Kirkman Road) Interchange, Sand Lake Road over Shingle Creek, and Sand Lake Road over Florida's Turnpike. The bridge report is provided on CD.

#### 3.9.1 Sand Lake Road/SR 435 (Kirkman Road) Interchange

There are five bridges within this interchange. Four serve the Sand Lake Road mainline and will need to be widened. One is for turning traffic and is unaffected by this project. Three of the affected bridges have less than desirable vertical clearance and will need design exceptions. These bridges are further discussed in Section 3.2.1 (Design Exceptions).

### 3.9.1.1 Bridge No. 750044: Sand Lake Road Westbound over SR 435 (Kirkman Road) Southbound.

#### Existing

This bridge has a six-span configuration with a Type II AASHTO girder superstructure and a multicolumn concrete pier substructure. It spans over SR 435 (Kirkman Road) southbound and an exit ramp to Sand Lake Road. The bridge has an overall width of 42'-10", including two 12'-0" travel lanes, a 5'-11" inside shoulder, a 9'-10" outside shoulder, and two 1'-6½" barrier rails. The bridge has a minimum vertical clearance of 15.53' along the south beam line over the inside edge of SR 435 (Kirkman Road). The bridge was originally built around 1960 and received shoulder and barrier improvements in 2002. The sufficiency rating is above 90, indicating the structure is in good condition with significant remaining life.

#### Recommended

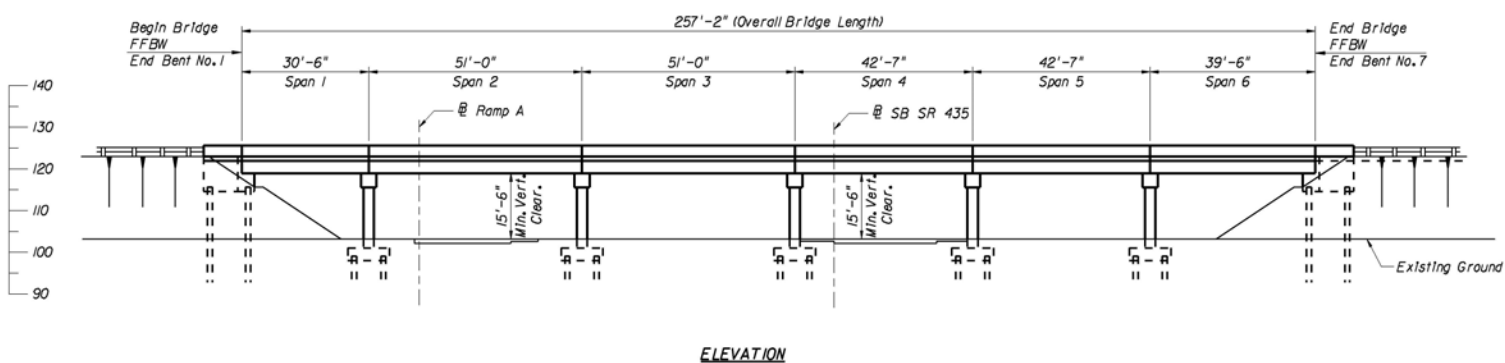
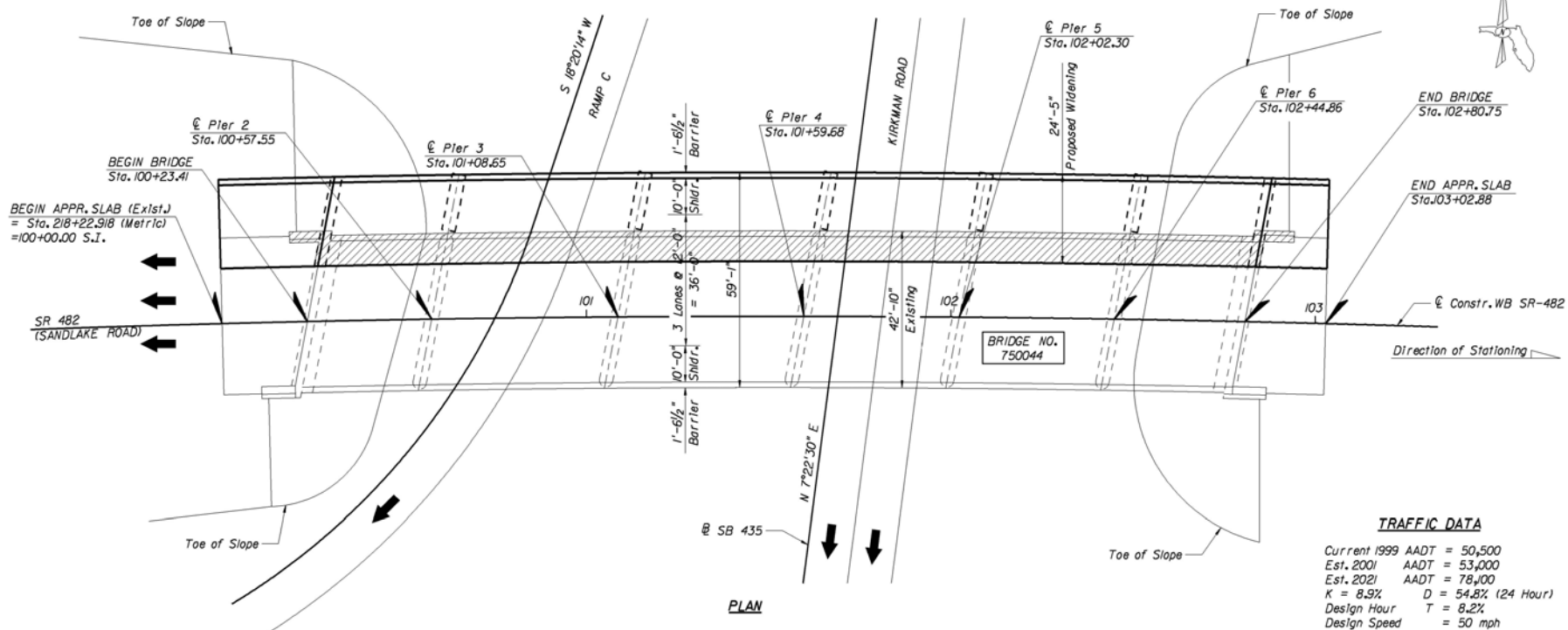
The proposed bridge will have an overall width of 59'-1", including three 12'-0" travel lanes, a 10'-0" inside and outside shoulder, and a new 1'-6½" outside barrier. It will require 24'-5" of new replacement bridge deck. This will be accomplished through an outside (high side) widening. Because the 2002 safety improvement widening utilized an eccentric pier configuration to avoid the original pier footing, the exterior girder and widened pier will have to be removed to allow for implementation of this proposed widening. A single column hammerhead type pier will be utilized to support the three new Type II AASHTO girders (see *Figures 3-16 and 3-17*). The high side widening will maintain the existing vertical clearance without any special considerations. A design variation of 0.47' will be required.

### 3.9.1.2 Bridge No. 750043: Sand Lake Road Eastbound over SR 435 (Kirkman Road) Southbound.

#### Existing

This bridge has a five-span configuration with a Type II AASHTO girder superstructure and a multicolumn concrete pier substructure. It spans over SR 435 (Kirkman Road) southbound and an entrance ramp to Lockheed Martin. The bridge has an overall width of 54'-10", including three 12'-0" travel lanes, a 5'-11" inside shoulder, a 9'-10"





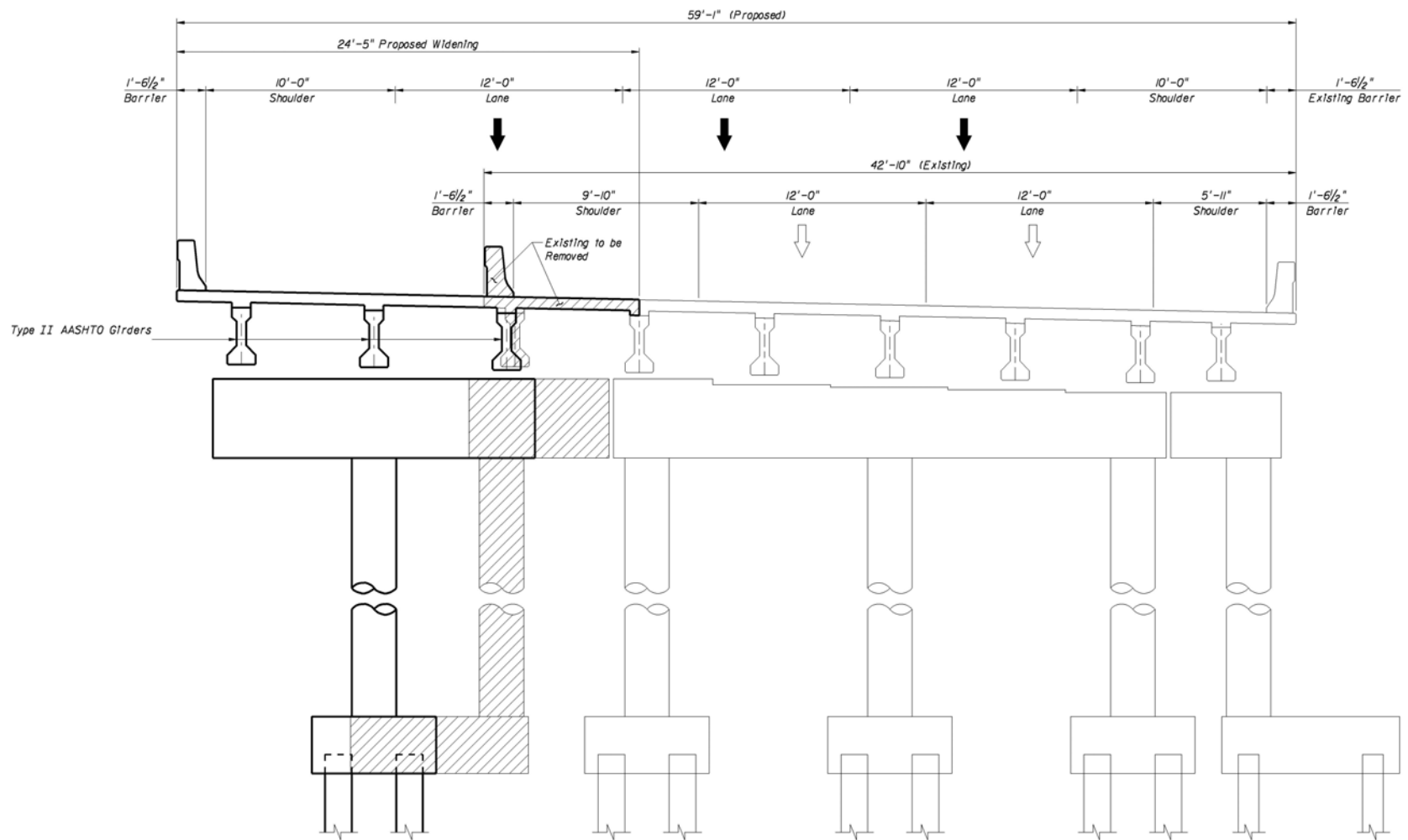
BRIDGE NUMBER: 750044

SR 482 PD&E Study  
Project Development Summary Report

Financial Project ID: 407143-3-22-01

SR 482 Westbound over SR 435  
Southbound Plan and Elevation

Figure  
3-16



TYPICAL SECTION

BRIDGE NUMBER 750044

SR 482 PD&E Study  
Project Development Summary Report

Financial Project ID: 407143-3-22-01

SR 482 Westbound over SR 435  
Southbound Typical Section

Figure  
3-17

outside shoulder, and two 1'-6½" barrier rails. The bridge has a minimum vertical clearance of 16.0' along the north beam line over the inside edge of SR 435 (Kirkman Road). The bridge was originally built around 1960 and received shoulder and barrier improvements in 2002. The sufficiency rating is above 90, indicating the structure is in good condition with significant remaining life.

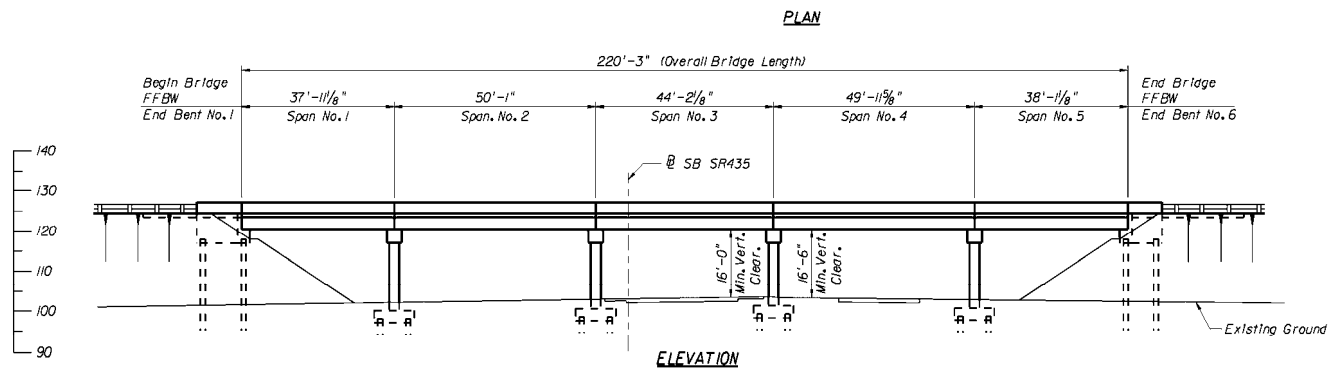
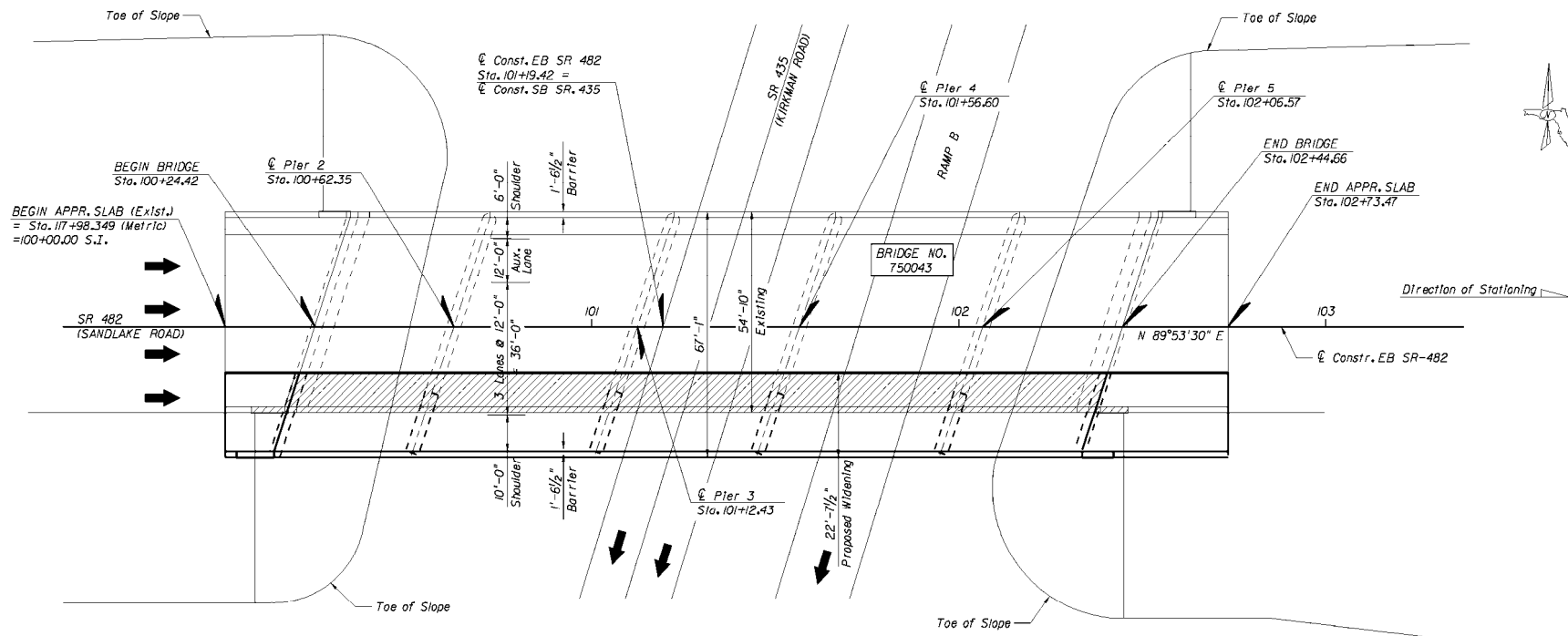
### Recommended

The proposed bridge will have an overall width of 67'-1", including three 12'-0" travel lanes, a 12'-0" auxiliary lane, a 6'-0" inside shoulder, a 10'-0" outside shoulder, and a new 1'-6½" outside barrier. It will require 22'-7½" of new replacement bridge deck. This will be accomplished through an outside (low side) widening. Because the 2002 safety improvement widening utilized an eccentric pier configuration to avoid the original pier footing, the exterior girder and widened pier will have to be removed to allow for implementation of this proposed widening. A single column hammerhead type pier will be utilized to support the three new Type II AASHTO girders (see *Figures 3-18* and *3-19*). The low side widening will require the use of modified girders to maintain the existing vertical clearance.

#### 3.9.1.3 Bridge No. 750144: Sand Lake Road Westbound over SR 435 (Kirkman Road) Northbound.

### Existing

This bridge has a five-span configuration with a Type II AASHTO girder superstructure and a multicolumn concrete pier substructure. It spans over SR 435 (Kirkman Road) northbound and an exit ramp from Sand Lake Road eastbound. The bridge has an overall width of 50'-11", including three 12'-0" travel lanes, a 5'-11" inside and outside shoulder, and two 1'-6½" barrier rails. The bridge has a minimum vertical clearance of 15.2' along the south beam line over the outside edge of SR 435 (Kirkman Road). The bridge was originally built around 1960 and received shoulder and barrier improvements in 2002. The sufficiency rating is above 90, indicating the structure is in good condition with significant remaining life.



#### TRAFFIC DATA

Current 1999 AADT = 50,500  
 Est. 2001 AADT = 53,000  
 Est. 2021 AADT = 78,000  
 K = 8.5% D = 54.8% (24 Hour)  
 Design Hour I = 8.2%  
 Design Speed = 50 mph

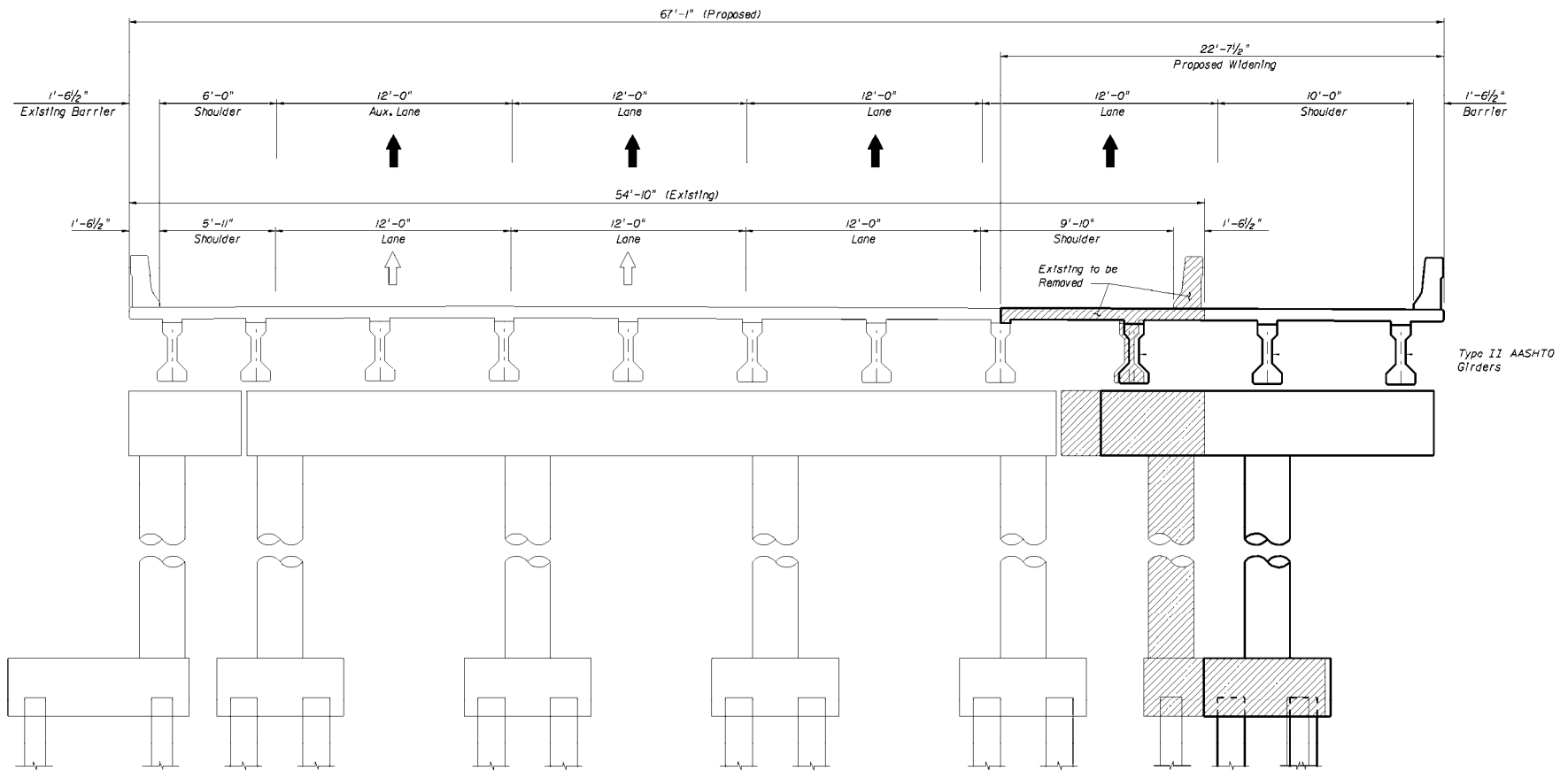
BRIDGE NUMBER: 750043

SR 482 PD&E Study  
 Project Development Summary Report

Financial Project ID: 407143-3-22-01

SR 482 Eastbound over SR 435  
 Southbound Plan and Elevation

Figure  
 3-18



TYPICAL SECTION

BRIDGE NUMBER: 750043

SR 482 PD&E Study  
Project Development Summary Report

Financial Project ID: 407143-3-22-01

SR 482 Eastbound over SR 435  
Typical Section

Figure  
3-19

### Recommended

The proposed bridge will have an overall width of 67'-1", including three 12'-0" travel lanes, a 12'-0" auxiliary lane, a 6'-0" inside shoulder, a 10'-0" outside shoulder, and a new 1'-6½" outside barrier. It will require 25'-5" of new replacement bridge deck. This will be accomplished through an outside (high side) widening. Because the 2002 safety improvement widening utilized an eccentric pier configuration to avoid the original pier footing, the exterior girder and widened pier will have to be removed to allow for implementation of this proposed widening. A two-column pier will be utilized to support the four new Type II AASHTO girders (see *Figures 3-20 and 3-21*). The high side widening will maintain the existing vertical clearance without any special considerations. A design variation of 0.8' will be required.

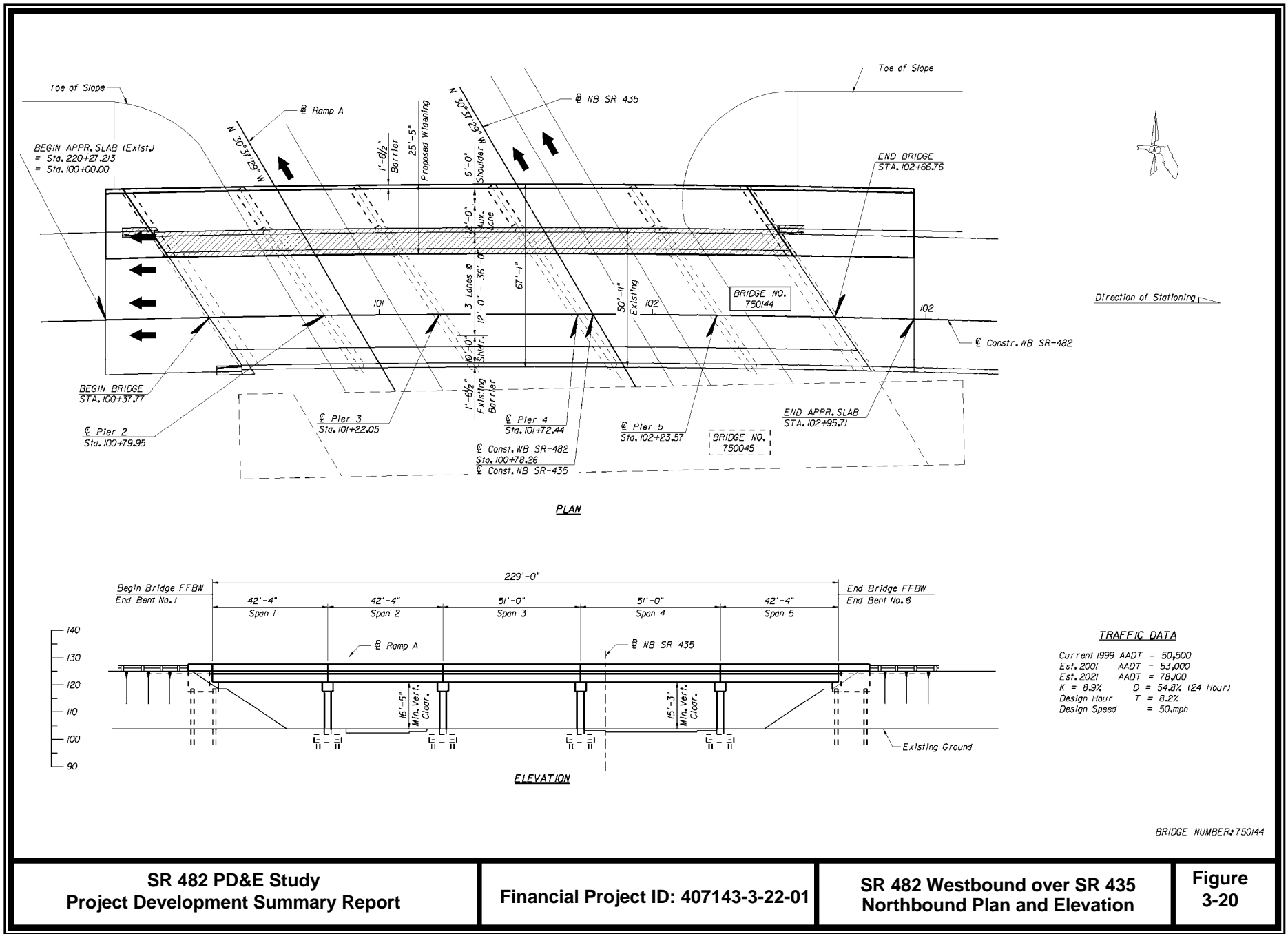
#### 3.9.1.4 Bridge No. 750143: Sand Lake Road Eastbound over SR 435 (Kirkman Road) Northbound.

### Existing

This bridge has a four-span configuration with a Type II AASHTO girder superstructure and a multicolumn concrete pier substructure. It spans over SR 435 (Kirkman Road) northbound. The bridge has an overall width of 42'-10", including two 12'-0" travel lanes, a 5'-11" inside shoulder, a 9'-10" outside shoulder, and two 1'-6½" barrier rails. The bridge has a minimum vertical clearance of 15.85' along the north beam line over the centerline of SR 435 (Kirkman Road). The bridge was originally built around 1960 and received shoulder and barrier improvements in 2002. The sufficiency rating is above 90, indicating the structure is in good condition with significant remaining life.

### Recommended

The proposed bridge will have an overall width of 59'-1", including three 12'-0" travel lanes, a 10'-0" inside and outside shoulder, and a new 1'-6½" outside barrier. It will require 26'-8" of new replacement bridge deck. This will be accomplished through an outside (low side) widening. Because the 2002 safety improvement widening utilized an eccentric pier configuration to avoid the original pier footing, the exterior girder and

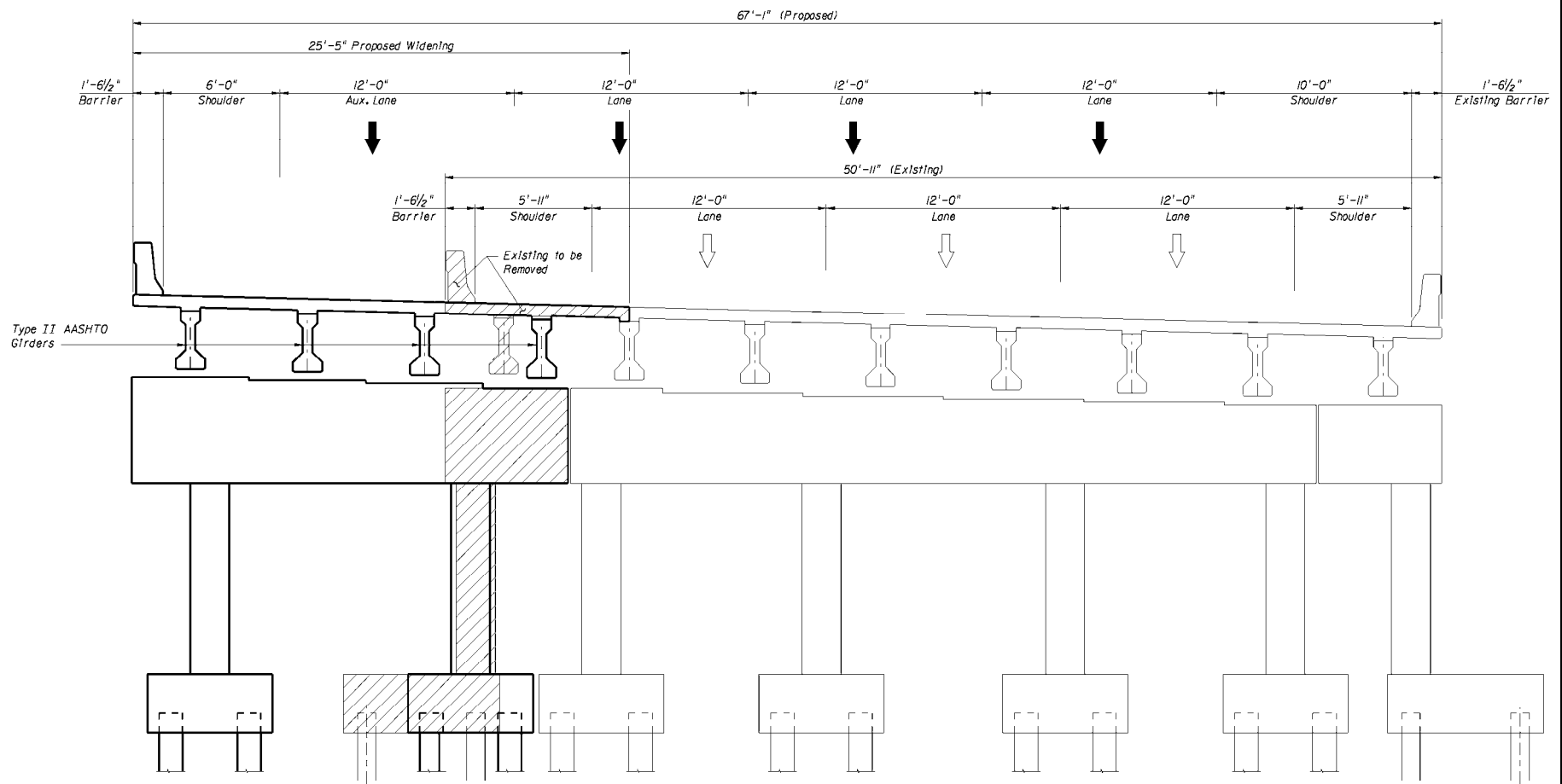


SR 482 PD&E Study  
Project Development Summary Report

Financial Project ID: 407143-3-22-01

SR 482 Westbound over SR 435  
Northbound Plan and Elevation

Figure  
3-20



TYPICAL SECTION

BRIDGE NUMBER 750144



widened pier will have to be removed to allow for implementation of this proposed widening. A two-column pier will be utilized to support the four new Type II AASHTO girders (see *Figures 3-22 and 3-23*). The low side widening will require the use of modified girders to maintain the existing vertical clearance. A design variation of 0.15' will be required.

Bridge No. 750045: Sand Lake Road Westbound Off Ramp over SR 435 (Kirkman Road) Northbound.

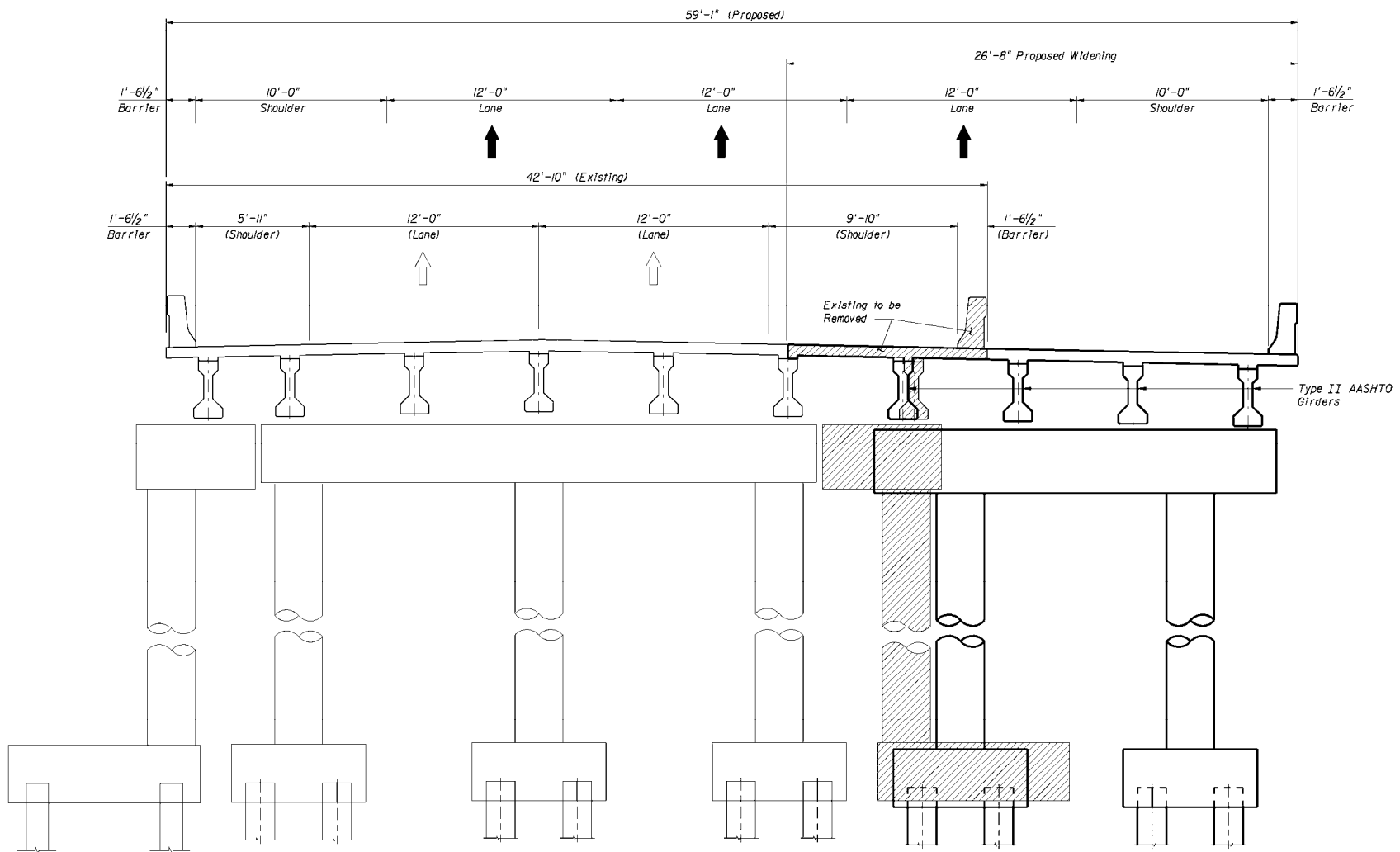
### Existing

This bridge has a five-span configuration with a Type II AASHTO girder superstructure and a multicolumn concrete pier substructure. It spans over SR 435 (Kirkman Road) northbound. The bridge has an overall width of 30'-11", including one 15'-10" travel lane, a 6'-0" inside and outside shoulder, and two 1'-6½" barrier rails. The bridge has a minimum vertical clearance of 14.83' along the south beam line over the inside of SR 435 (Kirkman Road) northbound. The bridge was originally built around 1960, and received shoulder and barrier improvements in 2002. The sufficiency rating is above 90, indicating the structure is in good condition with significant remaining life (see *Figures 3-24 and 3-25*).

This bridge is the fifth bridge in the Sand Lake Road/SR 435 (Kirkman Road) interchange and is not proposed for any improvements. It is noted here because it possesses the lowest controlling vertical clearance in the interchange. This study does not address any alternatives to correct this deficiency.

It should also be noted that all of the proposed replacement pier configurations mentioned above are presented as worse case scenarios assuming that the existing 2002 widening pier foundations do not have adequate pile capacity to be incorporated into these proposed improvements. This assumption should be investigated and confirmed during the final design process.





TYPICAL SECTION

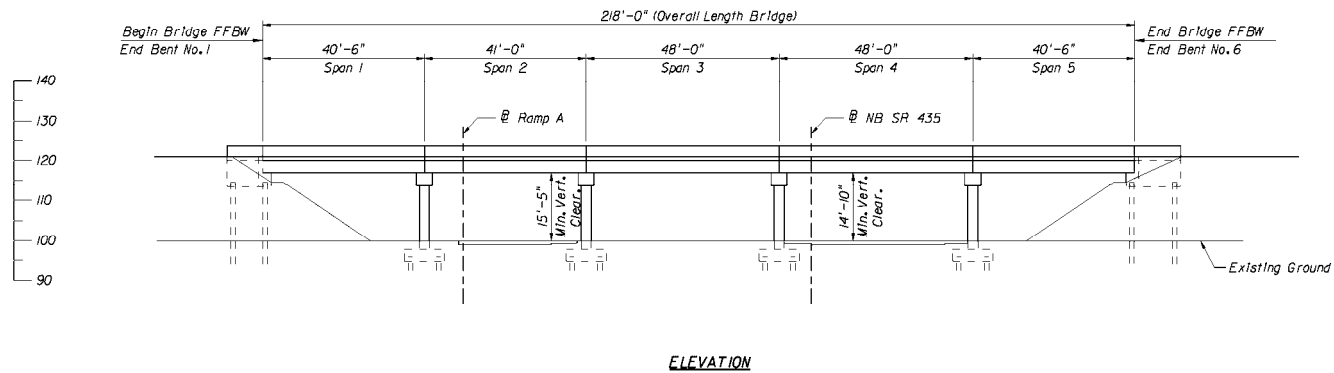
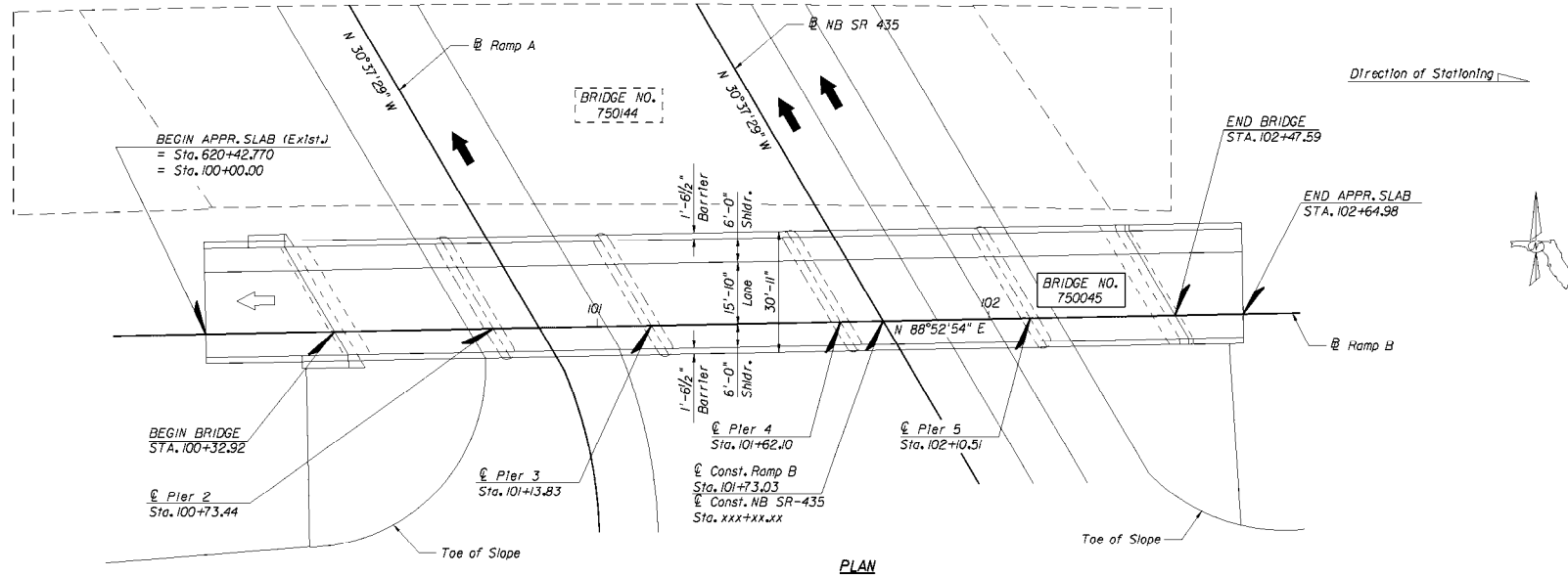
BRIDGE NUMBER: 750143

SR 482 PD&E Study  
Project Development Summary Report

Financial Project ID: 407143-3-22-01

SR 482 Eastbound over SR 435  
Northbound Typical Section

Figure  
3-23



#### TRAFFIC DATA

Current 1999 AADT = 50,500  
 Est. 2001 AADT = 53,000  
 Est. 2021 AADT = 78,000  
 K = 8.5% D = 54.8% (24 Hour)  
 Design Hour T = 8.2%  
 Design Speed = 50 mph

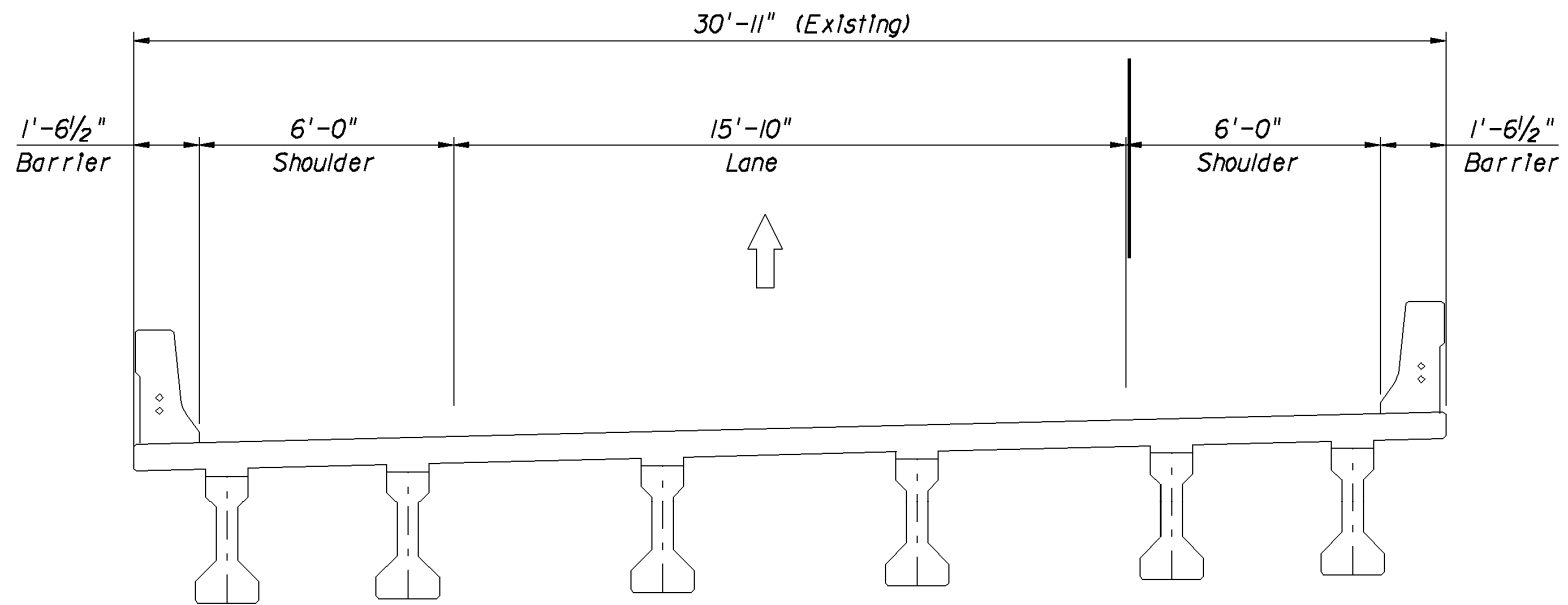
BRIDGE NUMBER# 75004

SR 482 PD&E Study  
 Project Development Summary Report

Financial Project ID: 407143-3-22-01

SR 482 Westbound Off-Ramp over  
 SR 435 Northbound Plan and  
 Elevation

Figure  
 3-24



TYPICAL SECTION

BRIDGE NUMBER: 750045

SR 482 PD&E Study  
Project Development Summary Report

Financial Project ID: 407143-3-22-01

SR 482 Westbound Off-Ramp over  
SR 435 Northbound Typical Section

Figure  
3-25

### 3.9.2 Sand Lake Road over Shingle Creek

There are two existing bridges over Shingle Creek that are to be replaced.

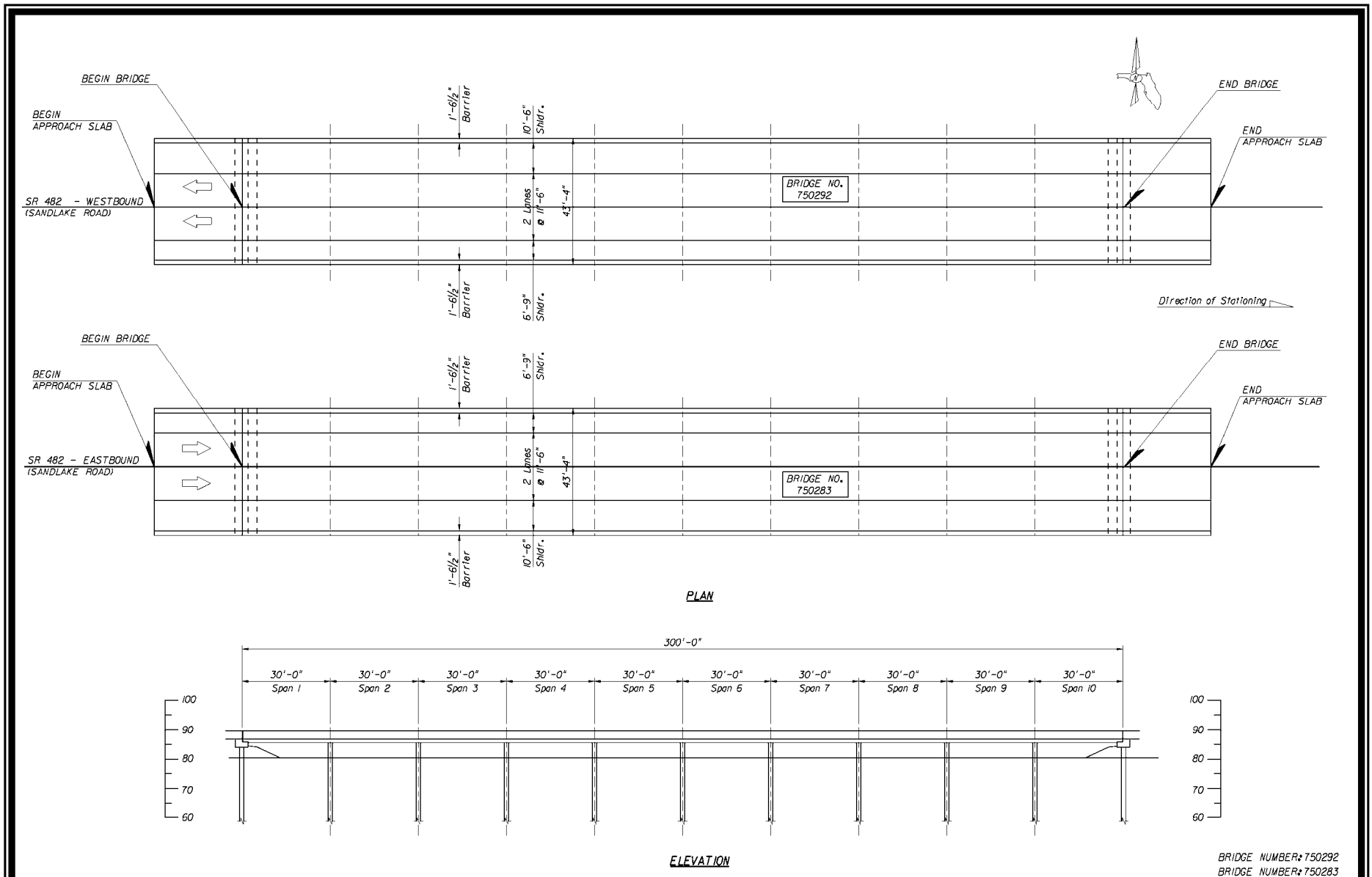
#### 3.9.2.1 Bridge No. 750283: Sand Lake Road Westbound and Bridge No. 750292: Sand Lake Road Eastbound.

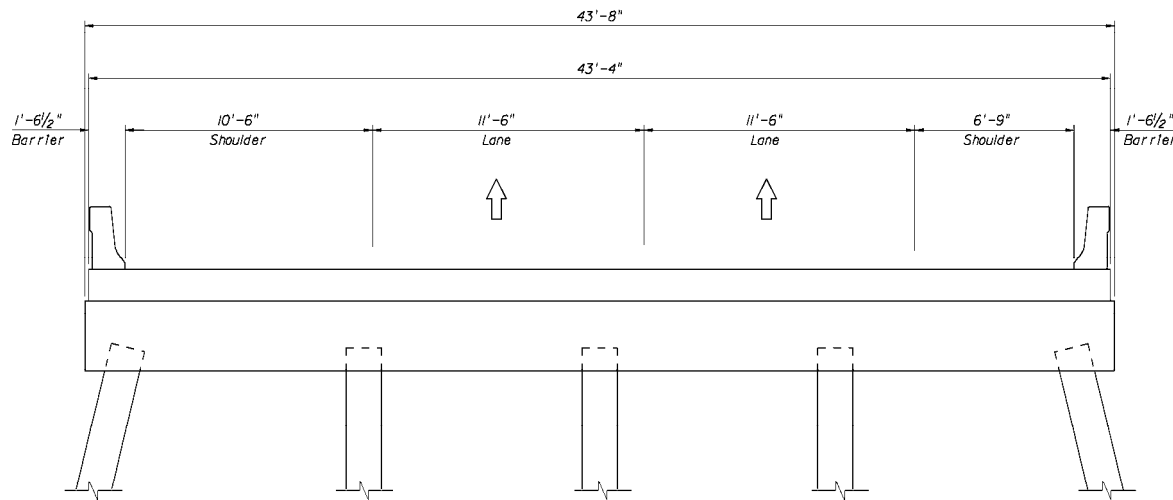
##### Existing

These bridges are twin 10-span bridges with precast flat slab superstructures supported on concrete pile bent substructures. Each bridge carries two 11'-6" travel lanes with 6'-9" inside and 10'-6" outside shoulders, and 1'-6½" barriers (see *Figures 3-26 and 3-27*). The bridges were built in 1978 and received an external post-tensioning retrofit in 1998 due to continued maintenance problems with the decks. In addition to providing for a six-lane typical section, this study is also tasked with conveying and accommodating Orange County's Shingle Creek Trail through the project area. The trail is proposed to cross Shingle Creek along the north side of Sand Lake Road and travel south along the east bank of Shingle Creek. The existing bridges have low member elevations of approximately 88.5 feet. Shingle Creek has a seasonal high water (10-year flood) elevation of 86.5 feet. This only allows 2' of vertical clearance above the seasonal high water. The 100-year flood elevation is 89.0 feet. Thus a minimum elevation of 90.0 feet is required to meet flood criteria. The existing bridges do not meet this criteria.

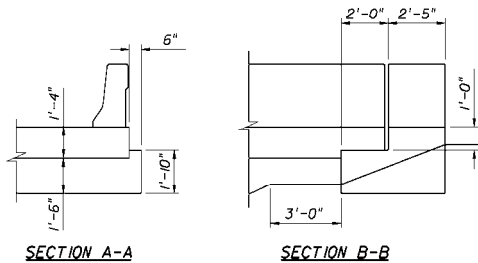
##### Recommended

Replacement structures for Shingle Creek were determined to be a more viable option than the widening of these bridges. The proposed bridges will have a five-span configuration with the use of a Type III AASHTO girder superstructure. This configuration will allow for the placement of new pile bents staggered with the existing foundations to eliminate pile driving conflicts. The structure would provide three 12'-0" travel lanes in each direction with 10'-0" inside and outside shoulders and 1'-6½" barriers. A 14'-0" trail facility and 1'-0" handrail would be provided on the north side of the westbound bridge and a 6'-0" sidewalk and 1'-0" handrail would be provided on the south side of the eastbound bridge (see *Figures 3-28, and 3-29*). A 17'-9" open median





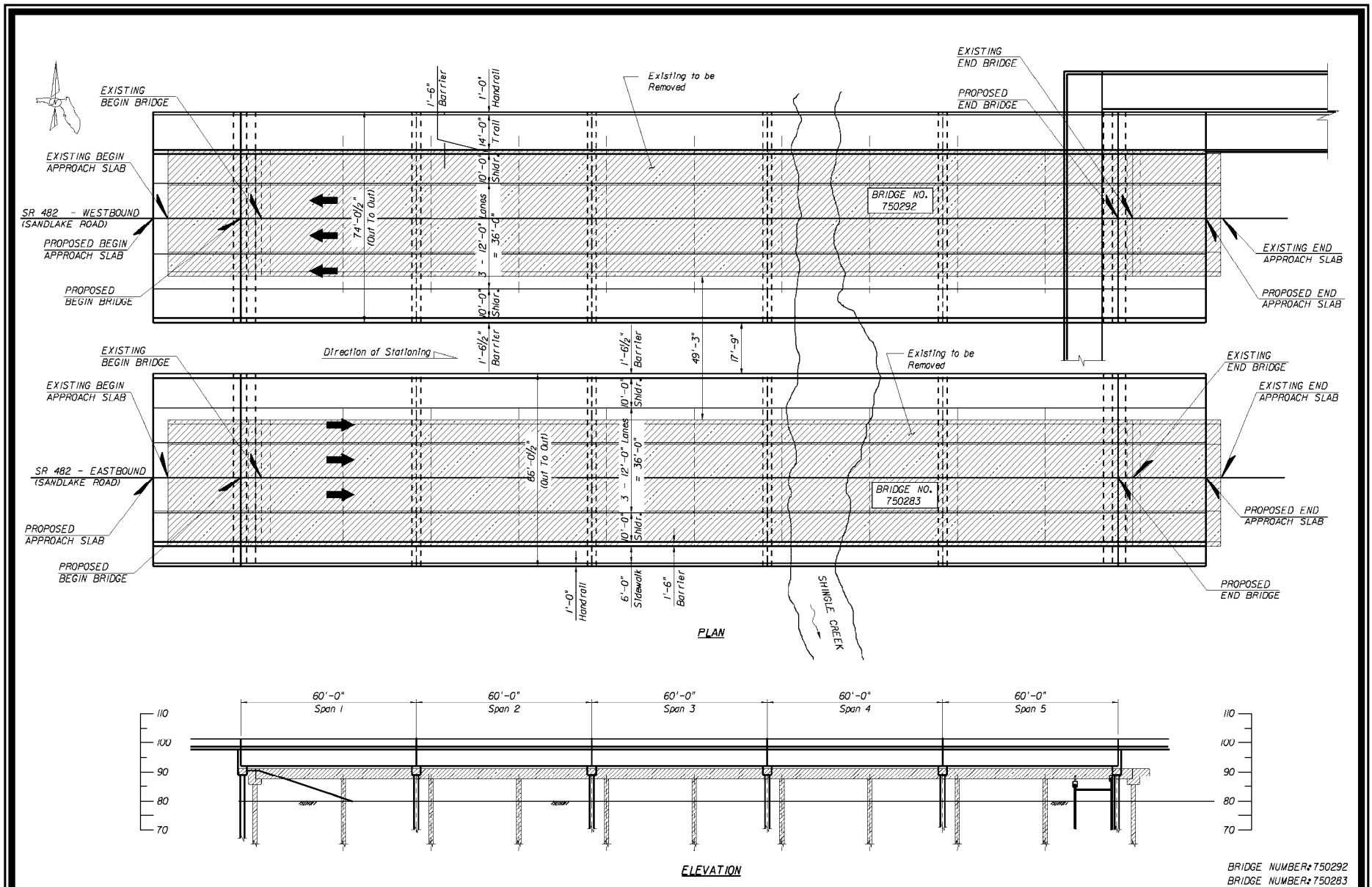
**TYPICAL SECTION**  
(Looking Eastbound)



**END BENT**

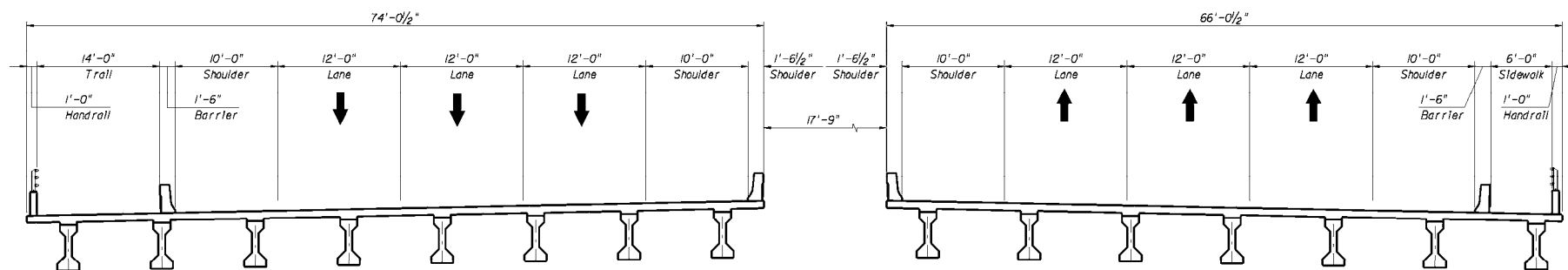
BRIDGE NUMBER: 750292  
BRIDGE NUMBER: 750283





BRIDGE NUMBER: 750292  
BRIDGE NUMBER: 750283

<p><b>SR 482 PD&amp;E Study</b> <b>Project Development Summary Report</b></p>	<p><b>Financial Project ID: 407143-3-22-01</b></p>	<p><b>Proposed Bridges at Shingle Creek</b></p>	<p><b>Figure 3-28</b></p>
---	--	---	---------------------------



BRIDGE NUMBER: 750292

BRIDGE NUMBER: 750283

SR 482 PD&E Study  
Project Development Summary Report

Financial Project ID: 407143-3-22-01

Proposed Bridges at Shingle Creek  
Typical Sections

Figure  
3-29

would be provided between the structures. Construction of the new bridges would be phased in order to maintain existing traffic lanes. The switchback ramp will need a new bridge number.

The new structure will have a profile allowing for the additional depth of structure of the Type III AASHTO girders and provides an approximate new low member elevation of 92.0 feet. This will allow for accommodation of the trail crossing beneath the new structures at the expected trail elevation. This will also provide an 8' vertical clearance for the trail users. The trail would be conveyed across the north side of the westbound bridge and would be taken down to its proposed grade through the use of switchback ramps. The ramps would be set at a 5% grade to meet ADA requirements and would provide a 14' wide landing at the switchback point and the base of the bridge as the trail turns to go under the structures (see *Figure 3-30*).

### 3.9.3 Turnpike Overpass

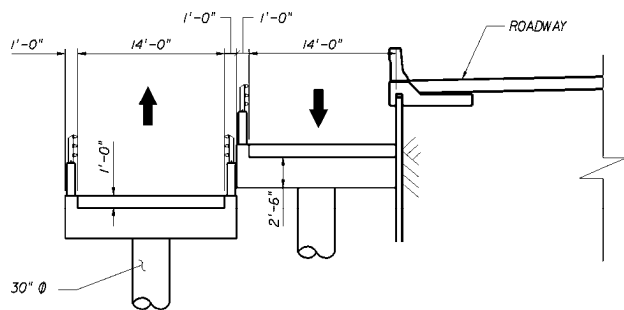
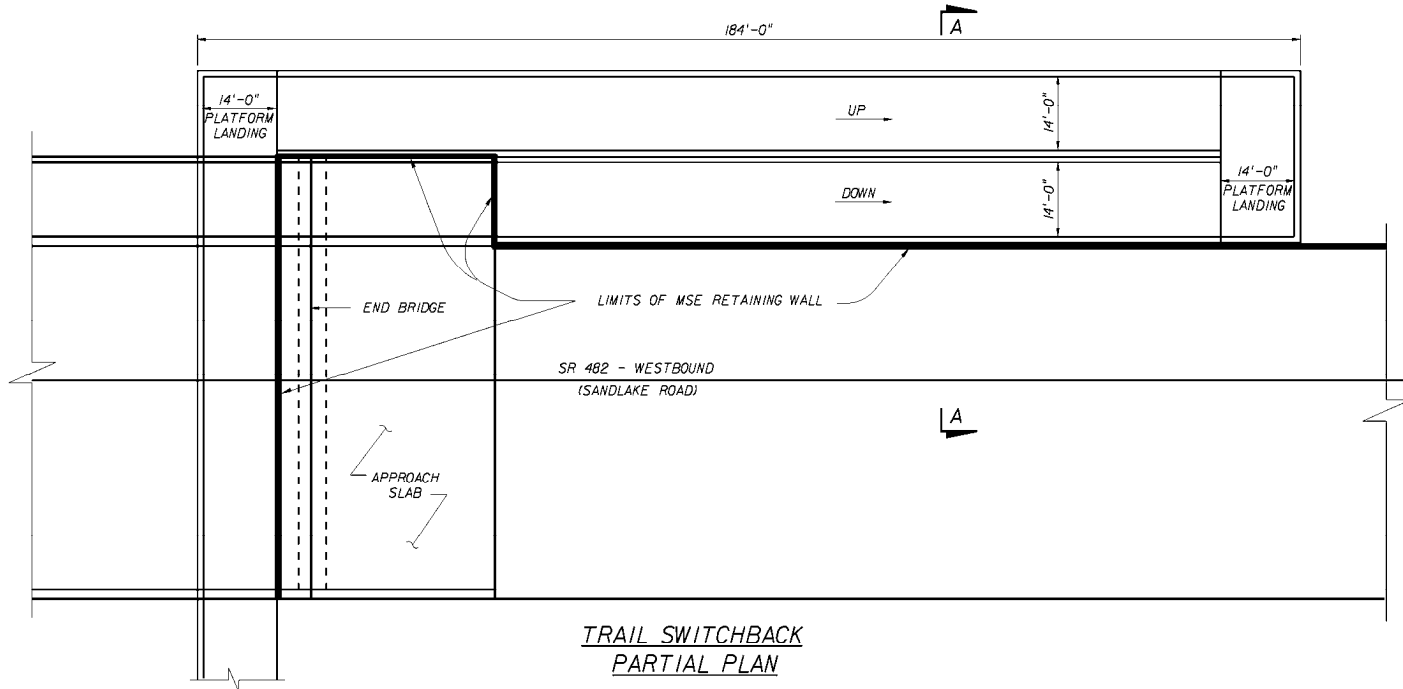
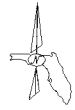
#### 3.9.3.1 Bridge No. 750568: Sand Lake Road over Florida's Turnpike.

##### Existing

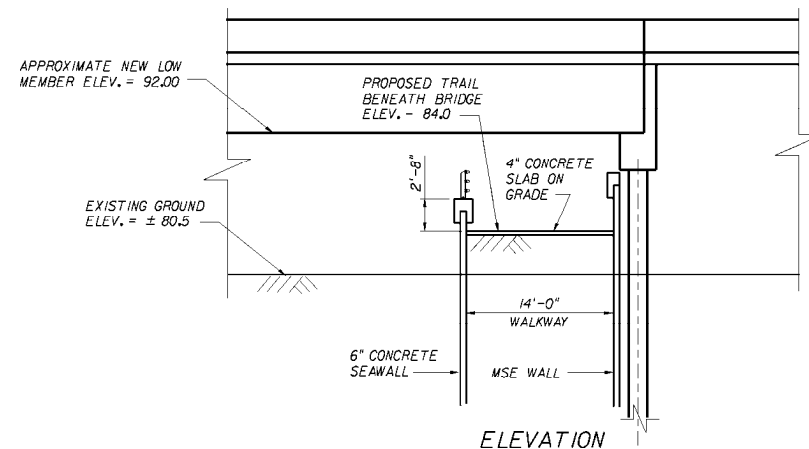
The Sand Lake Road eastbound bridge over the Turnpike is being replaced as a part of Turnpike widening construction project, and will be a two-span configuration with approximately 95' of horizontal envelope over each direction of the Turnpike. The new bridge will provide three 12'-0" travel lanes and two 10'-0" shoulders.

##### Recommended

This structure would be widened to provide a six foot sidewalk with barrier (see *Figure 3-31*). It should be noted that this widening assumes the no build alternative for the Turnpike interchange. The interchange concept expands the widening further and replaces the existing westbound structure. Combining the bridge widening to provide a sidewalk with the widening for the interchange would create a more efficient interchange project as the future sidewalk area could initially be used for maintenance of traffic. See Part II of this report.



**SECTION A-A THROUGH TRAIL SWITCHBACK**



BRIDGE NUMBER# 750292  
BRIDGE NUMBER# 750283

**SR 482 PD&E Study  
Project Development Summary Report**

**Financial Project ID: 407143-3-22-01**

**Proposed Bridges at Shingle Creek  
Miscellaneous Details**

**Figure  
3-30**



### 3.10 Utilities

All known utility companies in the area were contacted. Several individual meetings were held with utility owners to discuss their facilities and potential impacts due to this proposed project. The team met with Progress Energy Distribution, Progress Energy Transmission and Orange County Utilities. The utilities and their existing and proposed facilities are described below. The utility plans and report are provided on CD.

#### 3.10.1 Existing Facilities

Existing facilities are shown in *Table 3-4*.

#### 3.10.2 Proposed Facilities

Orange County Utilities will replace a 24-inch DIP Force Main (FM) throughout the project corridor due to its failure at several locations. A 42-inch DIP FM from the County Treatment Plant continuing east through Presidents Drive will also be replaced due to its poor condition. In an effort to work in conjunction with this project, the County has deferred this work and it will be done under a Utility Work by Highway Contractor Agreement.

Progress Energy Transmission will expand their existing feeder network within the project corridor. They are currently in the final design phase of placing an additional 230 kV feeder in their existing utility corridor to the east of SR 435 (Kirkman Road). This will be an addition to their existing pole structures.

Orange County has decided not to request buried utilities between International Drive and Universal Boulevard. The added cost to Orange County for burying these utilities would have been approximately \$580,000.

#### 3.10.3 Utility Mitigations

Orange County Utilities. Lift Station #3142 is located on the west side of International Drive just to the north of Sand Lake Road. This station will need to be relocated. It is

TABLE 3-4. EXISTING UTILITIES

Segment	Station	Description	Roadway Location	Type of Utility	Company Name	Service	Facilities
1	Station 4+20.00 to Station 20+60.00	1,600 Feet West of Turkey Lake Road to Turkey Lake Road	North Side	Electric	Progress Energy Florida, Inc.—Distribution	Overhead	Feeders
						Underground	Feeders Streetlights
				Sewer and Water	Orange County Utilities	Force Main, Sanitary and Reuse	sanitary (multiple sizes), 20" PVC Force Main (FM), 14" CIP (FM) and 30" DIP Reuse (RU). Lift Station 3151, 30" DIP RU on north side, 10" DIP FM on north side and sanitary (multiple sizes-flow to west)
				Telecommunications	Orlando Telephone	Local Carrier	Existing facilities, both aerial and buried
			South Side	Cable Television	Bright House Networks	CATV	Aerial and underground facilities the entire length. When aerial, they are underbuilt with the power company. Underground crossing at the Turnpike on the south side.
				Electric	Progress Energy Florida, Inc.—Distribution	Overhead	Feeders
						Underground	Feeders Streetlights
				Gas	Peoples Gas (TECO)	Low Pressure	4 inch steel line on the south side of Sand Lake from west of Turkey Lake. This line extends north on Turkey Lake on the east side.
2	Station 20+60.00 to Station 43+15.00	Turkey Lake Road to International Drive	North Side	Electric	Progress Energy Florida, Inc.—Distribution	Overhead	Feeders
				Sewer and Water	Orange County Utilities	Force Main, Sanitary and Reuse	48" casing crossing from north west corner to south east corner with 30" DIP RU enclosed (heads south on east sideof Turkey Lake), 16" PVC FM, 10" DIP FM on north, sanitary on north (multiple sizes) 30" steel casing crossing with a 16" FM inside. 24" DIP FM.
				Telecommunications	Orlando Telephone	Local Carrier	Existing facilities, both aerial and buried
				Cable Television	Bright House Networks	CATV	Aerial and underground facilities the entire length. When aerial they are underbuilt with the power company. They have an underground crossing at the Turnpike on the south side.
			South Side	Electric	Progress Energy Florida, Inc.—Distribution	Overhead	Feeders until just west of I-4; crosses SR 482 (Sand Lake Road) and continues on north side
				Gas	Peoples Gas (TECO)	Underground	Feeder to just east of I-4
3	Station 43+15.00 to Station 59+75.00	International Drive to Universal Boulevard	North Side	Electric	Progress Energy Florida, Inc.—Distribution	Overhead	Feeders; this line goes north on International Drive on east side with span guy across SR 482 (Sand Lake Road) to the south
						Underground	Feeder comes south from Canada Avenue and then heads south on Universal Boulevard
				Sewer and Water	City of Orlando	Wastewater	Existing 16" DIP Force main connects to existing OCU 24" FM at Republic Drive (at a bottom elevation of 100.2); continues north on Republic Drive to International Drive, heads west approximately 1200' to Lift Station #29 on the east side of International Drive
				Sewer and Water	Orange County Utilities	Force Main, Sanitary and Reuse	24" DIP FM 8" CIP from their Lift Station #3142
							Canada Drive: north side 24" DIP FM, east side of Canada to the north is an 8" PVC FM
				Gas	Peoples Gas (TECO)	Low Pressure	At Universal Blvd: north side 24" DIP FM; east side of Universal north of Sand Lake 16" DIP FM
				Telecommunications	Orlando Telephone	Local Carrier	Multiple lines; a 4" steel line continues east on Sand lake from International Drive on the north side of the roadway; a branch line heads north at Universal Boulevard on the west side of the road
			South Side	Cable Television	Bright House Networks	CATV	Existing facilities, both aerial and buried
				Sewer and Water	Orange County Utilities	Force Main, Sanitary and Reuse	Aerial and underground facilities the entire length. When aerial they are underbuilt with the power company. Underground crossing at the Turnpike on the south side.
				Gas	Peoples Gas (TECO)	Low Pressure	14" DIP FM At Universal Blvd: south side 36" DIP RU, east side of Universal south of Sand Lake there is a 36" DIP RU.
4	Station 59+75.00 to Station 106+00.00	Universal Boulevard to Greenbriar Parkway	North Side	Electric	Progress Energy Florida, Inc.—Distribution	Overhead	Feeders until just east of SR 435 (Kirkman Road) Double circuit from just east of SR 435 (Kirkman Road)
						Underground	Overhead distribution goes underground
				Electric	Orlando Utilities Commission—Transmission	Overhead	Transmission corridor beginning east of SR 435 (Kirkman Road)
							1-230 kV transmission line
							1-69 kV transmission line
				Sewer and Water	Orange County Utilities	Force Main, Sanitary and Reuse	At Kirkman: north side there is 24" DIP FM (crosses to south side of Sand Lake with no casing)
				Gas	Peoples Gas (TECO)	Low Pressure	From east side of Kirkman Interchange 4" steel gas line; branch line heads north at Universal Boulevard on west side of road
				Telecommunications	Orlando Telephone	Local Carrier	Existing facilities, both aerial and buried
			Center	Telecommunications	MCI/Verizon Business	Long Distance	Facilities cross Sand Lake
				Cable Television	Bright House Networks	CATV	Aerial and underground facilities the entire length. When aerial they are underbuilt with the power company. Underground crossing at the Turnpike on the south side.
				Electric	Progress Energy Florida, Inc.—Transmission	Overhead	Overhead Transmission (72 kV) begins at two terminal poles untl approximately 700 feet east of northbound SR 435 (Kirkman Road) and tie into transmission corridor
						Underground	Underground feeder line (UG) consisting of 6-6" HDPE pipes and 75 kV feeder cables terminating at two large transmission poles. When crossing SR 482 (Sand Lake Road, they vary in depth from 4.5' to 21' but remain at 3' below grade once in median.
				Electric	Orlando Utilities Commission—Distribution	Overhead	Distribution line mainly in center median with several crossings to north and south
				Gas	Peoples Gas (TECO)	Low Pressure	4" steel gas line in center median following the OUC distribution line until east side of Kirkman Interchange
			South Side	Electric	Orlando Utilities Commission—Transmission	Overhead	Transmission corridor beginning east of SR 435 (Kirkman Road)
				Sewer and Water	Orange County Utilities	Force Main, Sanitary and Reuse	At Kirkman: south side there is 36" DIP RU

TABLE 3-4. EXISTING UTILITIES (CONTINUED)							
5	Station 106+00.00 to Station 144+35.00	Greenbriar Parkway to Kingspointe Parkway	North Side	Electric	Progress Energy Florida, Inc.—Distribution	Overhead	Double circuit
							Overhead distribution goes underground
				Sewer and Water	Orange County Utilities	Force Main, Sanitary and Reuse	At Mandarin Dr.: Manhole on north west corner has 15" VCP sanitary lines, At Treatment Plant north side 42" DIP FM crossing road, 42" PCCP RU crossing (no casing size available), north side has 12" DIP FM (Out of Service (OOS))
				Gas	Peoples Gas (TECO)	Low Pressure	4" steel gas line
				Telecommunications	Orlando Telephone	Local Carrier	Existing facilities, both aerial and buried
			Cable Television	Bright House Networks	CATV	Aerial and underground facilities the entire length. When aerial they are underbuilt with the power company. Underground crossing at the Turnpike on the south side.	
			Center	Electric	Orlando Utilities Commission—Distribution	Underground	Distribution line mainly in center median with several crossings to north and south
			South Side	Electric	Orlando Utilities Commission—Transmission	Overhead	Transmission corridor
Sewer and Water	Orange County Utilities	Force Main, Sanitary and Reuse		At Mandarin Dr.: south side has a 24" DIP FM and 36" DIP RU. At Treatment Plant (South side of Sand Lake bet. Mandarin and Kingspointe): 18" VCP sanitary road crossing, south side 24" DIP FM, 36" DIP RU and 12" CIP FM & 14" CIP FM (both OOS).			
Telecommunications	MCI/Verizon Business	Long Distance		Facilities emerge			
6	Station 144+35.00 to Station 182+00.00	Kingspointe Parkway to West of John Young Parkway	North Side	Electric	Progress Energy Florida, Inc.—Distribution	Overhead	Double circuit
				Sewer and Water	Orange County Utilities	Force Main, Sanitary and Reuse	Plant to east of Shingle Creek: north side has 42" DIP FM (aerial at Creek), on east side of Creek 16" DIP FM and 10" PVC FM cross (south to north).
				Sewer and Water	Water Conserv II	Reuse	42" high pressure line (100-110 psi) exiting near the water treatment plant. They are in an easement on the south side of Sand Lake Road and head west. Near the Fire Department they cross to the north side of Sand Lake. From this point they head to the east at their easement they head to the north. This line was laid in 1983. They usually have a minimum cover of 4 feet. There are vibration concerns with this line if Super Pave is used or piles driven nearby.
				Gas	Peoples Gas (TECO)	Low Pressure	4" steel gas line
				Telecommunications	Orlando Telephone	Local Carrier	Existing facilities, both aerial and buried
				Cable Television	Bright House Networks	CATV	Aerial and underground facilities the entire length. When aerial they are underbuilt with the power company. Underground crossing at the Turnpike on the south side.
			South Side	Sewer and Water	Orange County Utilities	Force Main, Sanitary and Reuse	Plant to east of Shingle Creek: south side has 16" HDPE FM
				Telecommunications	MCI/Verizon Business	Long Distance	Section of line heads south on JYP and section continues east
7	Station 182+00.00 to Station 218+00.00	West of John Young Parkway to Presidents Drive	North Side	Electric	Progress Energy Florida, Inc.—Distribution	Overhead	Double circuit
				Electric	Progress Energy Florida, Inc.—Transmission		69 kV transmission lines
				Sewer and Water	Orange County Utilities	Force Main, Sanitary and Reuse	At John Young Pkwy: north side has 42" DIP FM, At Turnpike: north side has 42" DIP FM in casing below Turnpike (size unknown), At Presidents Drive: north side has 42" DIP FM
				Gas	Peoples Gas (TECO)	Low Pressure	4" steel gas line
				Telecommunications	MCI/Verizon Business	Long Distance	One line heads to north to Progress Energy Substation
				Cable Television	Bright House Networks	CATV	Aerial and underground facilities the entire length. When aerial they are underbuilt with the power company. Underground crossing at the Turnpike on the south side.
			South Side	Electric	Progress Energy Florida, Inc.—Distribution	Overhead	Double circuit
						Underground	Feeder
				Sewer and Water	Orange County Utilities	Force Main, Sanitary and Reuse	At John Young Pkwy: south side has 12" and 14" CIP FM's OOS, west side of JYP heading south are a 16" DIP FM, 10" PVC FM and 16" HDPE FM. At Turnpike: south side has 12" and 14" CIP FM's OOS. At Presidents Drive:south side has 14" CIP FM, 12" CIP FM (OOS), 10" VCP sanitary line and 15" VCP sanitary line crossing on the west side.
				Gas	Peoples Gas (TECO)	Low Pressure	8" steel gas line heads south on east side of JYP and continues to east with 4"
				Telecommunications	Orlando Telephone	Local Carrier	Existing facilities, both aerial and buried
				Cable Television	Bright House Networks	CATV	Aerial and underground facilities the entire length. When aerial they are underbuilt with the power company. Underground crossing to south at Turnpike.



currently located outside of the road right-of-way and as such, any relocation would be a project expense. Orange County has indicated an expected cost of approximately \$750,000 plus right-of-way.

There is also a 36-inch Reuse Main on the south side of Sand Lake Road between Universal Boulevard and the County Treatment Plant. It is important this line not be impacted by roadway construction. According to Orange County, any relocation or adjustment to this facility would cost approximately \$200,000 per conflict site.

Progress Energy Transmission. Special care should also be taken to maintain adequate clearances in areas where roadway elevations may be adjusted. An overhead transmission line is in the center median at the SR 435 (Kirkman Road) interchange. Ponds are proposed in these areas and the final design must provide the proper access to these poles. There is an underground 72 kV transmission line crossing Sand Lake Road just east of Universal Boulevard. These conduits are 10 to 21 feet in depth within this crossing and should not interfere with construction. Any adjustments or relocations of these lines would be costly and should be avoided.

Progress Energy Distribution. Major facilities on the north side of Sand Lake Road between I-4 and Universal Boulevard will need to be relocated where the road is widened. These facilities can be relocated to the proposed right-of-way. Bright House Networks and Orlando Business Telephone are jointly attached to these poles and will also need to be relocated. With respect to relocating these facilities underground, Progress Energy would be responsible for the cost of relocating overhead facilities. If Orange County requests undergrounding in this area, the County would be responsible for the added cost of undergrounding.

### **3.11 Maintenance of Traffic (MOT)**

Due to the high volume of commercial and recreational activity, the maintenance of traffic on Sand Lake Road is of key importance in planning for construction. In general, lane closures will need to be critically evaluated during final design, ensuring that they

are implemented only during times when they will not create undue hardship on the traveling public and adjacent business activity. It is expected that a minimum of two lanes in each direction will be maintained during most periods of the day, and access to all properties will be maintained at all times. The existing roadway has intermittent undesignated bike lanes. In the interest of safety and construction expediency, these bike lanes should be closed and the closure clearly marked, since all of the available pavement areas will need to be used for maintaining motor vehicular traffic on the roadway. All maintenance of traffic devices and procedures shall comply with the FDOT Roadway Design Standard Indices, 600 series.

#### 3.11.1 West of Turkey Lake Road

To construct Sand Lake Road from west of Turkey Lake Road to John Young Parkway, an extensive maintenance of traffic plan will need to be implemented. West of Turkey Lake Road, the existing roadway will be essentially reconstructed to match the existing roadway section, the reconstruction is necessary to bring the roadway pavement to condition to support the design year traffic. This will be accomplished by placing temporary pavement in the median so that the lanes can be shifted in while the outer lanes are constructed. The construction will progress by bifurcating the travel lanes and constructing the center portion of the pavement, and finally by moving two traffic lanes to the outside curb line while the inside lanes and the median are constructed.

#### 3.11.2 Turkey Lake Road to International Drive (I-4/SR 400 Interchange)

Through the I-4 interchange area, two through lanes in each direction and two eastbound left turn lanes need to be maintained while the pavement is reconstructed. Included in the reconstruction is a minor shifting of the crown which will be accomplished by milling the existing pavement and overbuilding the pavement structure to the proposed cross slopes. The existing traffic separator will need to be removed and pavement placed to fill in any gaps in the pavement section. The entire expanse of pavement can then be used to shift traffic lanes to facilitate construction. The lane configurations will need to be mated with the construction to the west of Turkey Lake Road to achieve progressive widening of the pavements through these two sections. Lane closures may be implemented to

facilitate construction, but it is expected that reducing the number of lanes below two in each direction can only be done during very limited periods of the day.

### 3.11.3 International Drive to Universal Boulevard

The section between International Drive and Universal Boulevard needs to be raised to appropriately blend the proposed roadway improvements with the adjacent properties for this outside widening section. In order to do this, a cost evaluation, a lane closure analysis and a construction staging plan will be developed to determine whether lanes can be closed for construction or whether the use of asphalt overbuild will be required to achieve the proposed pavement elevations under traffic. Reconstruction requires that the pavement areas under construction be taken out of service while the roadway is built. Utilizing an overbuild alternative permits construction to progress with short-term lane closures, allowing the lane to be reopened daily to serve peak traffic volumes. While the latter approach may cost more in materials and operations, the overall cost to the community may be lower when the issues of disrupting traffic and maintaining access are considered.

### 3.11.4 Universal Boulevard to Greenbriar Parkway (Kirkman Road/SR 435 Interchange)

The construction in Segment 4 involves widening in the Kirkman Road (SR 435) interchange area. This construction can be accomplished by narrowing the traffic lanes and shifting them to the inside shoulder while the outside widening is constructed. Temporary pavement will also be required so that traffic can be moved to the inside edges of the structures while the four bridges are widened to the outside. Careful attention to access and providing for all of the turning movements in this area will need to be taken into consideration.

### 3.11.5 Greenbriar Parkway to Kingspointe Parkway

Segment 5 will consist primarily of inside widening, with minor widening along the north side of the road. The widening of the north side should be undertaken first, so that the

traffic lanes can be pushed to the curb lines in both directions, allowing the most amount of room available for the inside widening.

#### 3.11.6 Kingspointe Parkway to John Young Parkway (SR 423)

The Segment 6 construction is similar to Segment 5, but it consists of inside widening only. This work should be constructed in a time frame consistent with the inside widening of Segment 4, to minimize the amount of traffic shifts during construction. This work can be accomplished by narrowing and pushing the travel lanes onto the existing shoulder, while the median construction is accomplished. In this section, replacement of the twin bridges over Shingle Creek will be included in the inside widening and will drive the schedule for this portion of the construction.

The Shingle Creek bridges will be replaced by first pushing the two lanes of traffic to the outside edges of the bridges. Temporary pavement along the outside approaches may be required to provide for transitions from the edge of the bridge shoulder to the edge of the roadway shoulder. The inside portions of the existing bridges will then be removed and two lanes of the new bridges will be constructed. Inside temporary pavement may then be constructed to transition two lanes onto the new structures. The remainder of the existing structures will then be removed and the new structures widened to the final configuration. After this is done and the roadway is widened, the bridges and roadway can be placed in its final configuration.

#### 3.11.7 East of John Young Parkway (SR 423)

Sidewalks are proposed along both sides of the road in Segment 6 and the south side of the road in Segment 7. These sidewalks are constructed away from the travel lane at the edge of the right-of-way. Their construction can be done with minimal interference with traffic and may be done at the contractor's discretion during the construction period, provided that that operations required to perform this construction do not interfere with other construction operations. The Segment 7 construction needs to be coordinated very closely with the proposed improvements to the east, including the widening of the existing eastbound bridge over Florida's Turnpike.

### **3.12 Transit Accommodations**

#### **3.12.1 General**

Existing bus stops, where the sidewalk is not at the back of curb, should be provided with a landing/curb-to-sidewalk connection. A minimum landing width of five feet should be provided. All bus stops should be placed at least 40 feet away from curb returns at a minimum; however, 60 feet is desirable.

#### **3.12.2 Lowe's (Station 196+00.00)**

At the northwest corner of Lowe's Home Centers, a 30-foot closed ditch should be provided before going to open swale to ensure pedestrian access. This would preserve the opportunity for a bus stop along Sand Lake Road directly north of Lowe's Home Center at some point in the future. A pedestrian crossing would also be desirable to ensure pedestrian access. This crossing could be considered in conjunction with the future Turnpike ramp intersection development and related traffic signalization.

#### **3.12.3 Universal Boulevard (Side Street)**

A new bus stop should be provided on Universal Boulevard north of Sand Lake Road to serve existing route Link 21. This would involve sidewalk extensions only.

#### **3.12.4 Kingspointe Parkway (Station 144+35.00)**

A new bus stop with shelters should be provided on the north side of Sand Lake Road directly west of West Kingspointe Parkway and on the south side of Sand Lake Road directly east of East Kingspointe Parkway.

#### **3.12.5 International Drive (Station 43+15.00)**

At the eastbound approach of the intersection of Sand Lake Road and International Drive, the right-turn only lane poses an operational difficulty. Right-of-way limitations preclude a far side bus bay. Therefore, signing which allows buses to go straight from the right-turn lanes should be provided. Right turn only signs will include a "Except Busses" plaque

### 3.13 Intersection Improvements

Several intersections along Sand Lake Road will be provided with additional turn lanes (in addition to through lanes).

#### 3.13.1 Turkey Lake Road (Station 20+60)

Northbound (not included in initial construction project)

- Add two right-turn lanes. These may be provided by a proposed developer improvement. Additional right of way will be needed.
- Reuse existing lanes to provide two left-turn lanes and two through lanes.

Southbound (not included in initial construction project)

- Reuse existing curb to curb area to add an additional lane providing two southbound left-turn lanes and two through lanes.
- Add southbound right-turn lane. Additional right of way is needed for this lane.

Westbound

- Add second left-turn lane.

Eastbound

- Add second left-turn lane.

#### 3.13.2 I-4 (Station 32+00)

Westbound Off Ramp

- Provide additional ramp lane to service vehicles which will turn left at Turkey Lake Road.

Eastbound Off Ramp

- Develop geometry to prevent ramp traffic from traveling across Sand Lake Road to access the I-4 eastbound on ramp. This will allow the westbound Sand Lake

Road to westbound I-4 traffic to flow at all times except during the eastbound left-turn phase.

### 3.13.3 International Drive (Station 43+15)

#### Northbound

- Add second left-turn lane. Additional right of way is needed.
- Install median traffic separator.

#### Southbound

- Lengthen right and left-turn lanes. Additional right of way is needed

### 3.13.4 Universal Boulevard (Station 59+75)

#### Northbound

- Realign approach. Additional right of way is needed.

#### Southbound

- Add right-turn lane.

### 3.13.5 Greenbriar Parkway (Station 105+00)

Future traffic forecasts suggest that this intersection may warrant signalization. However, due to the impacts on traffic flow, Orange County has requested that signalization be avoided. Thus, intersection geometry is modified to allow a more effective merge between eastbound Sand Lake Road traffic and southbound to eastbound Greenbriar Parkway traffic. Second stage improvements are shown in the concept plans which would ultimately allow signalization of the eastbound and westbound intersections. Due to the bifurcated alignment of Sand Lake Road in this area, access to Sand Lake Road from the south should not be provided in a way so that it requires signalization.

### 3.13.6 Mandarin Drive (Station 118+00)

#### Westbound

- Add right-turn lane. Additional right of way is needed.
- Add left-turn lane for future roadway connection.

### 3.13.7 Kingspointe Parkway (Station 144+00)

- Relocate traffic signal to Kingspointe Parkway east.
- Provide directional opening at Kingspointe Parkway west.

The noted changes provide the benefits of dual left-turns with the directional opening functioning in the “shadow” of the downstream signal. This allows flexible access and avoids access and turn conflicts at existing RaceTrac driveways on Kingspointe Parkway east and west adjacent to Sand Lake Road.

### 3.13.8 John Young Parkway (Station 182+00)

- A single point urban interchange (SPUI) is under development by Orange County in a separate study. All Sand Lake Road lanes are currently in place. Therefore, no roadway improvements are considered in this study for the John Young Parkway intersection.

### 3.13.9 Presidents Drive (Station 218+00)

#### Northbound

- Add left-turn lane. Additional right of way is needed.

#### Southbound

- Add right-turn lane. Additional right of way is needed.

#### Eastbound

- Add second left-turn lane and second northbound receiving lane.



### 3.13.10 Storage Lane Requirements

Desired storage lengths were developed as a part of design traffic development. They are provided in *Appendix F*. In many cases, 2030 design hour volumes can not physically occur. Demand will spread to adjacent hours. Therefore, some reductions have been made in the storage length reflected in the concept plans. In all cases, storage for maximum requirements for 2020 are reflected unless the storage cannot be provided due to physical limitations. Reduced storage lengths are provided on Turkey Lake Road and Universal Boulevard due to median openings which are to be maintained.

### 3.13.11 Departure Throat Width

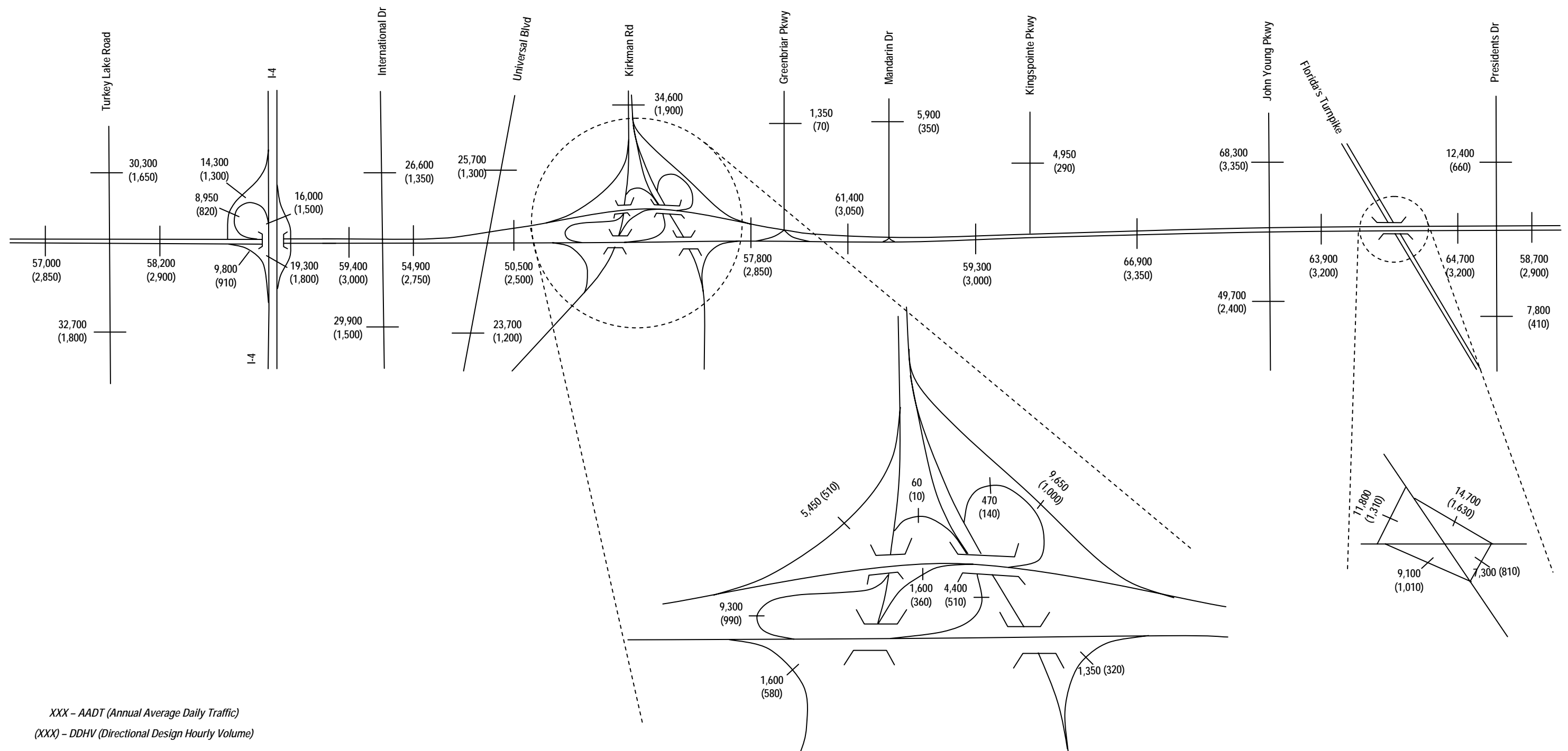
Orange County has requested careful consideration of turning templates to assure buses and trucks can move smoothly through double left maneuvers where reduced lane widths (i.e., 11-foot lanes) are used. Consideration should be given to flaring the curb line within existing right-of-way to provide a wider entry throat near the intersection.

## 3.14 Design Traffic

Average Annual Daily Traffic (AADT) and Directional Design Hourly Volumes (DDHV) for 2010, 2020 and 2030 are shown in *Figures 3-32, 3-33 and 3-34*, respectively. Intersection turning movements for the same period are provided in *Figures 3-35, 3-36, and 3-37*. Figures summarizing the level of service (LOS) of the project corridor for the recommended alternative for 2010, 2020 and 2030 are shown *Figures 3-38, 3-39, and 3-40*, respectively. The Design Traffic Report is provided on CD.

## 3.15 Crash Data

Crash data was obtained from the FDOT for the five-year period from 2000 to 2004. An overall crash summary for the project corridor is provided in *Table 3-5*. As shown in *Table 3-5*, an average of one fatality per year has occurred on Sand Lake Road.

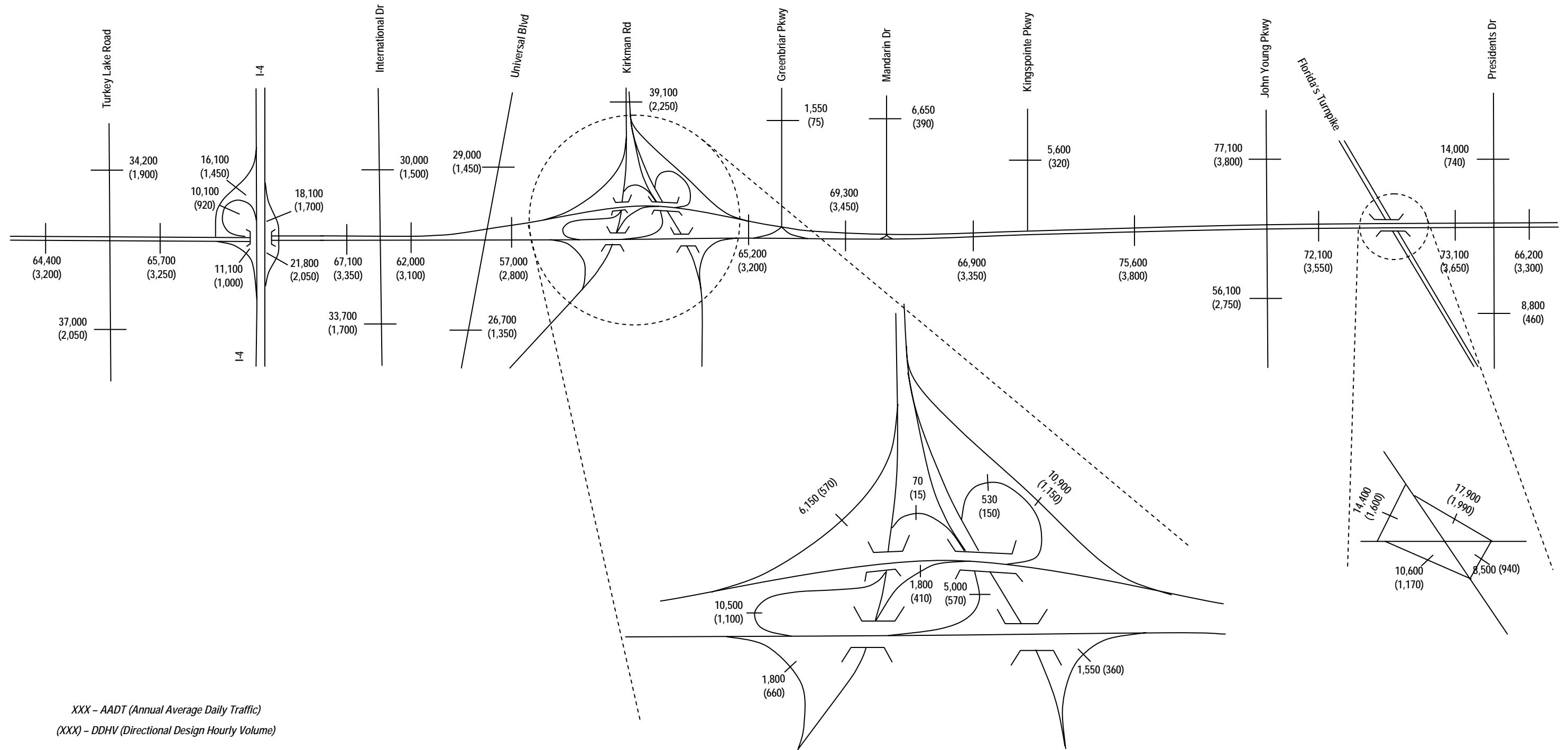


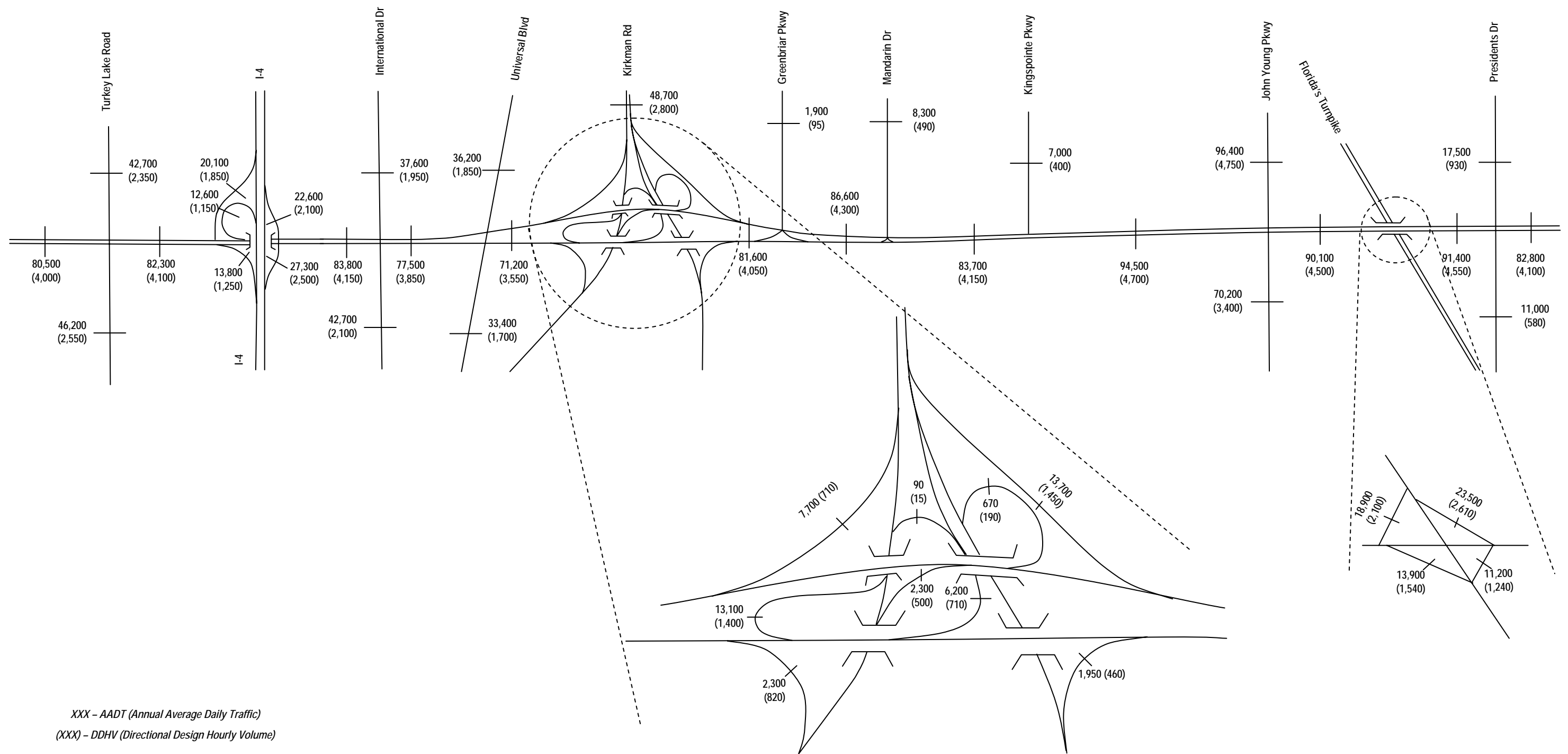
SR 482 PD&E Study  
Project Development Summary Report

Financial Project ID:407143-3-22-01

Opening Year 2010 –  
AADT/DDHV

Figure  
3-32



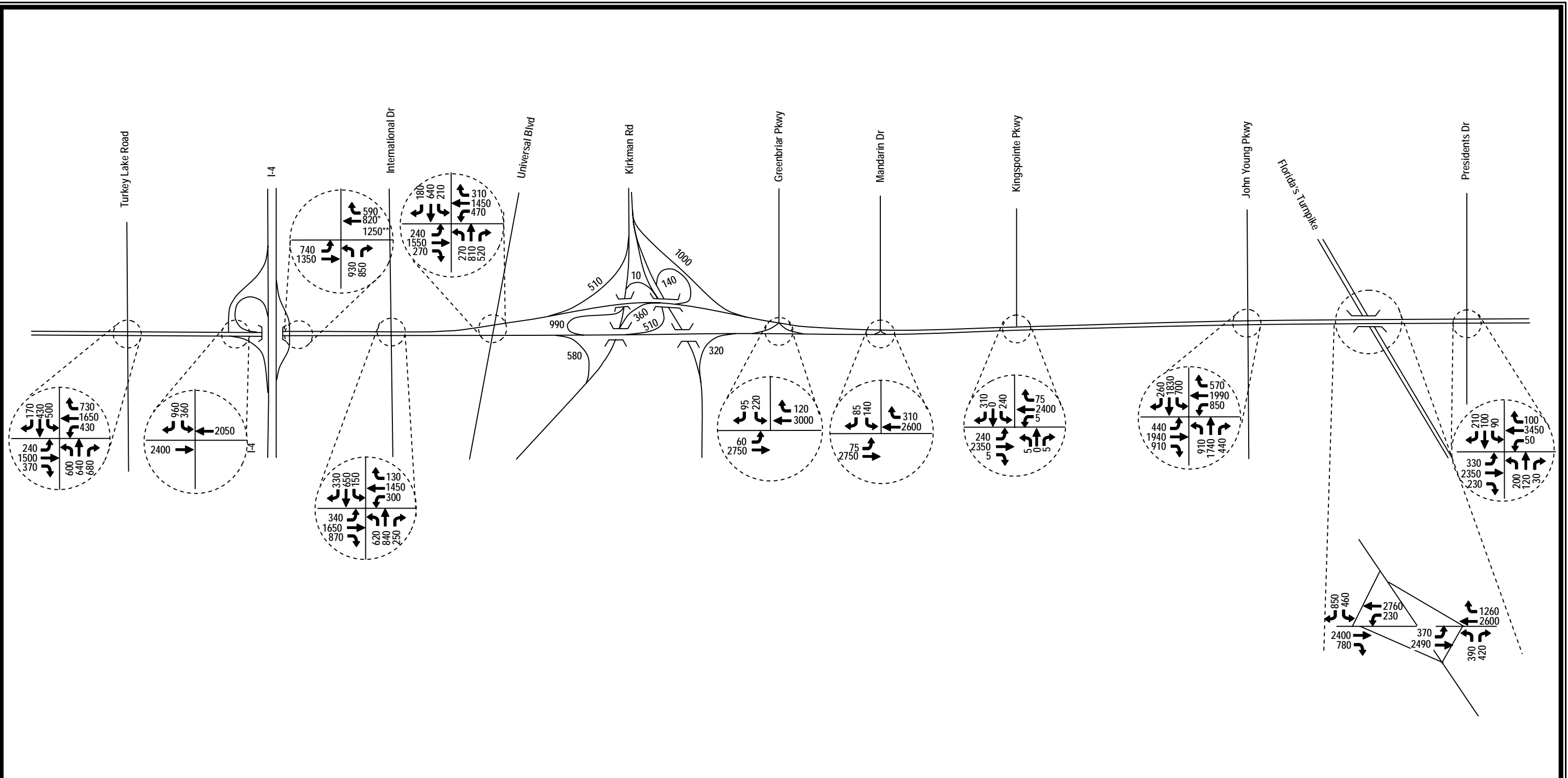


SR 482 PD&E Study  
Project Development Summary Report

Financial Project ID:407143-3-22-01

Design Year 2030 –  
AADT/DDHV

Figure  
3-34



XXX – DHV – Design Hour Volume

\* DHV for the Two Lanes on to I-4 Westbound On Ramp

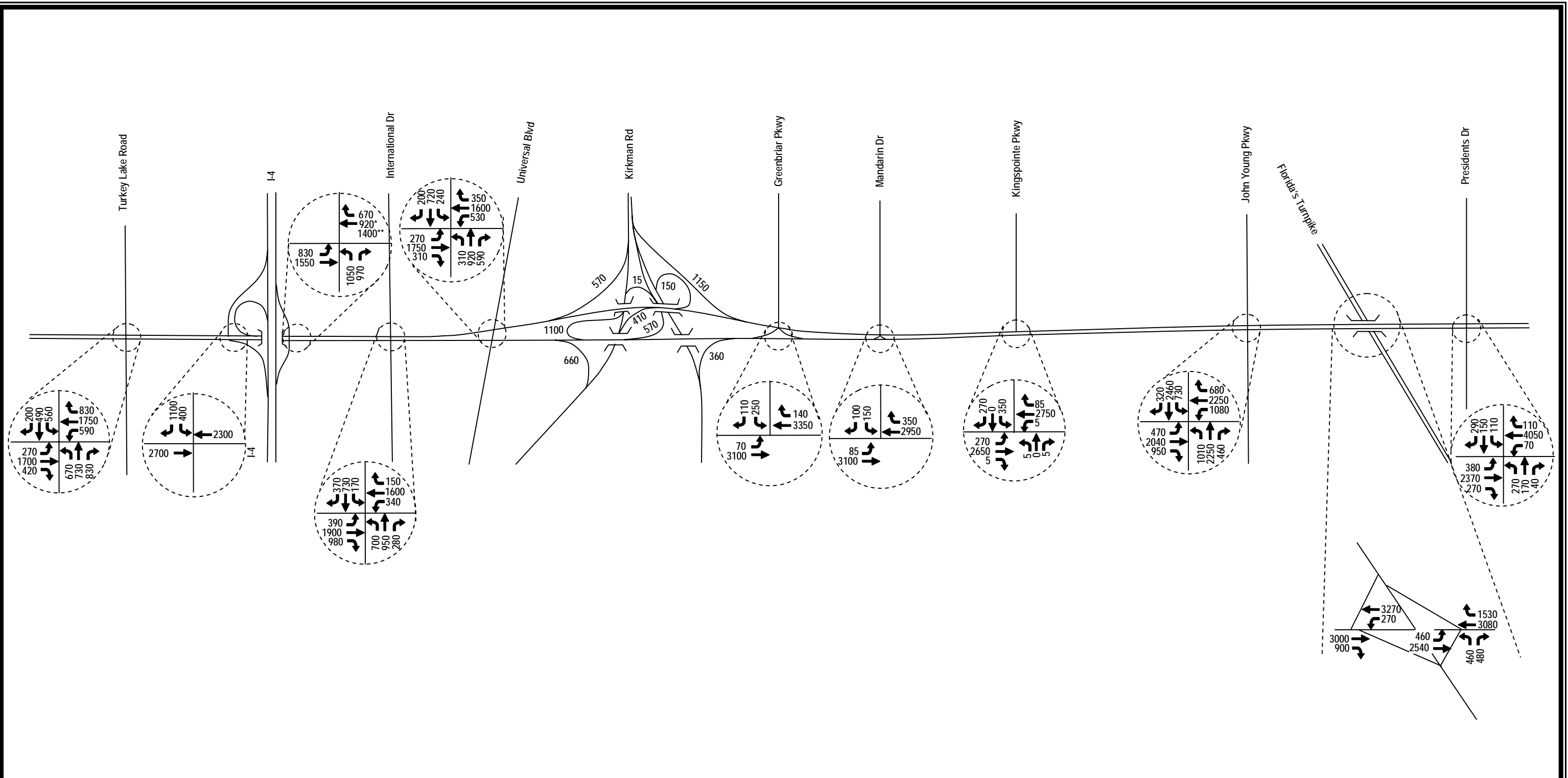
\*\* DHV for the Three Through Lanes along SR 482

SR 482 PD&E Study  
Project Development Summary Report

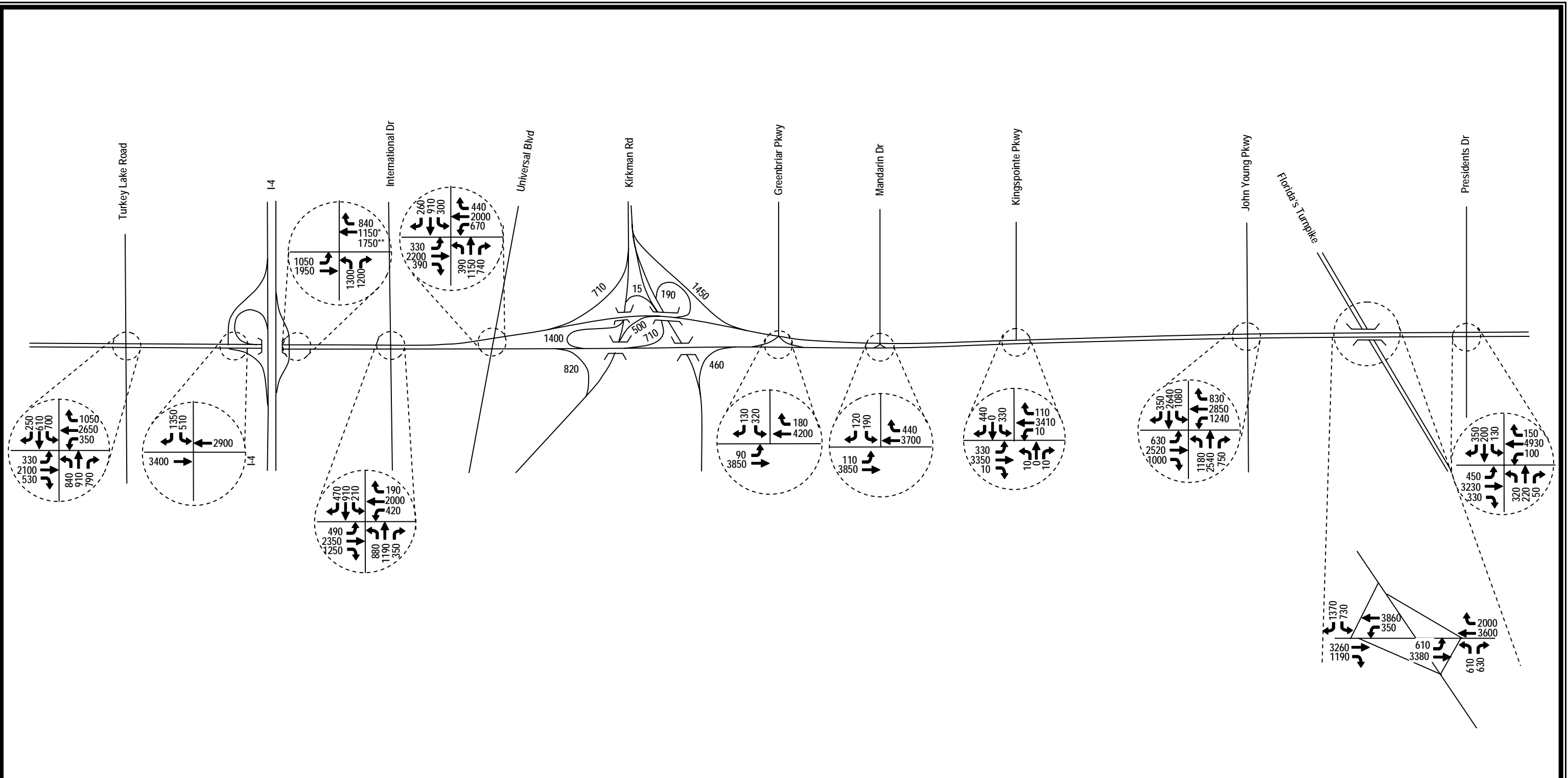
Financial Project ID:407143-3-22-01

Opening Year 2010 –  
DHV

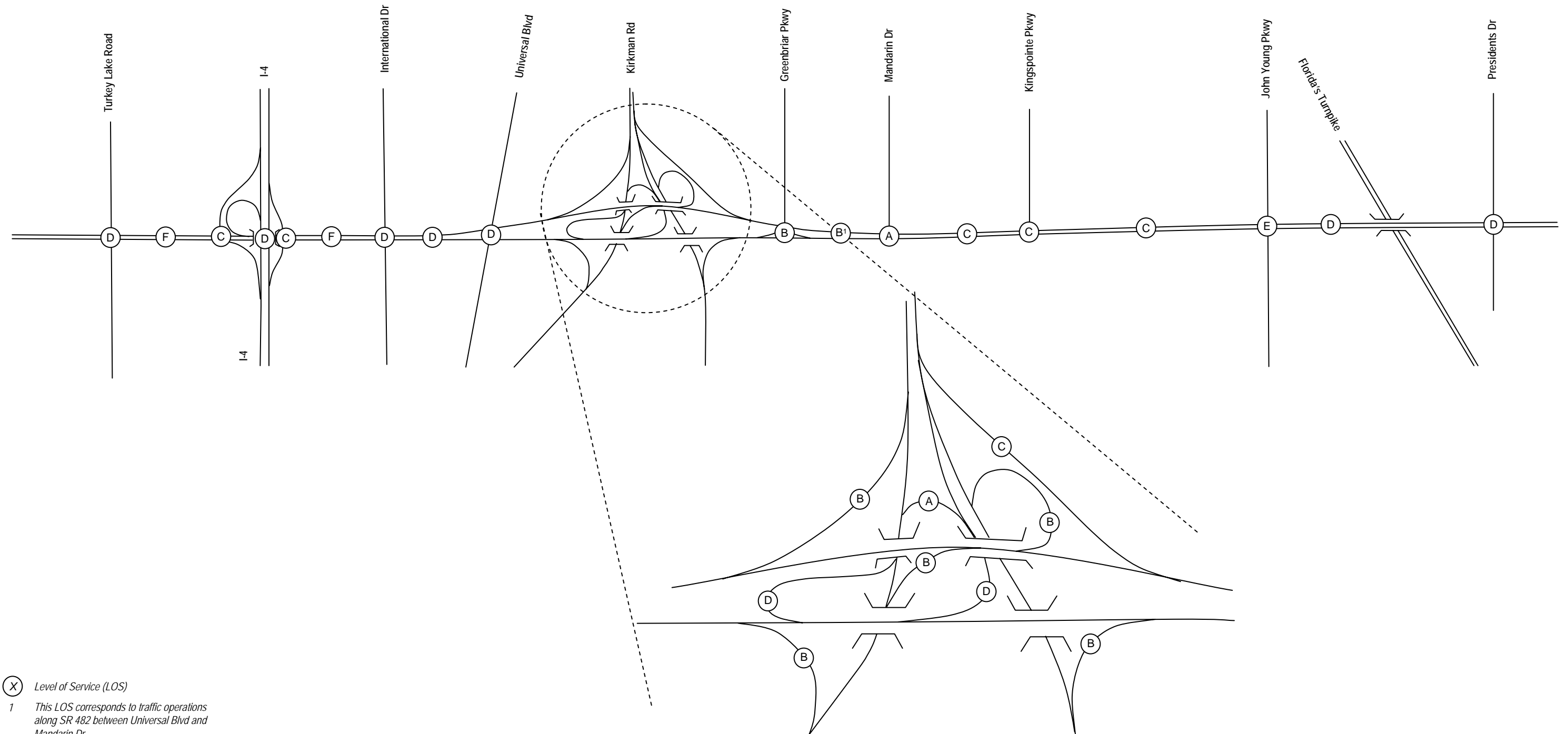
Figure  
3-35



XXX – DHV – Design Hour Volume  
 \* DHV for the Two Lanes on to I-4 Westbound On Ramp  
 \*\* DHV for the Three Through Lanes along SR 482

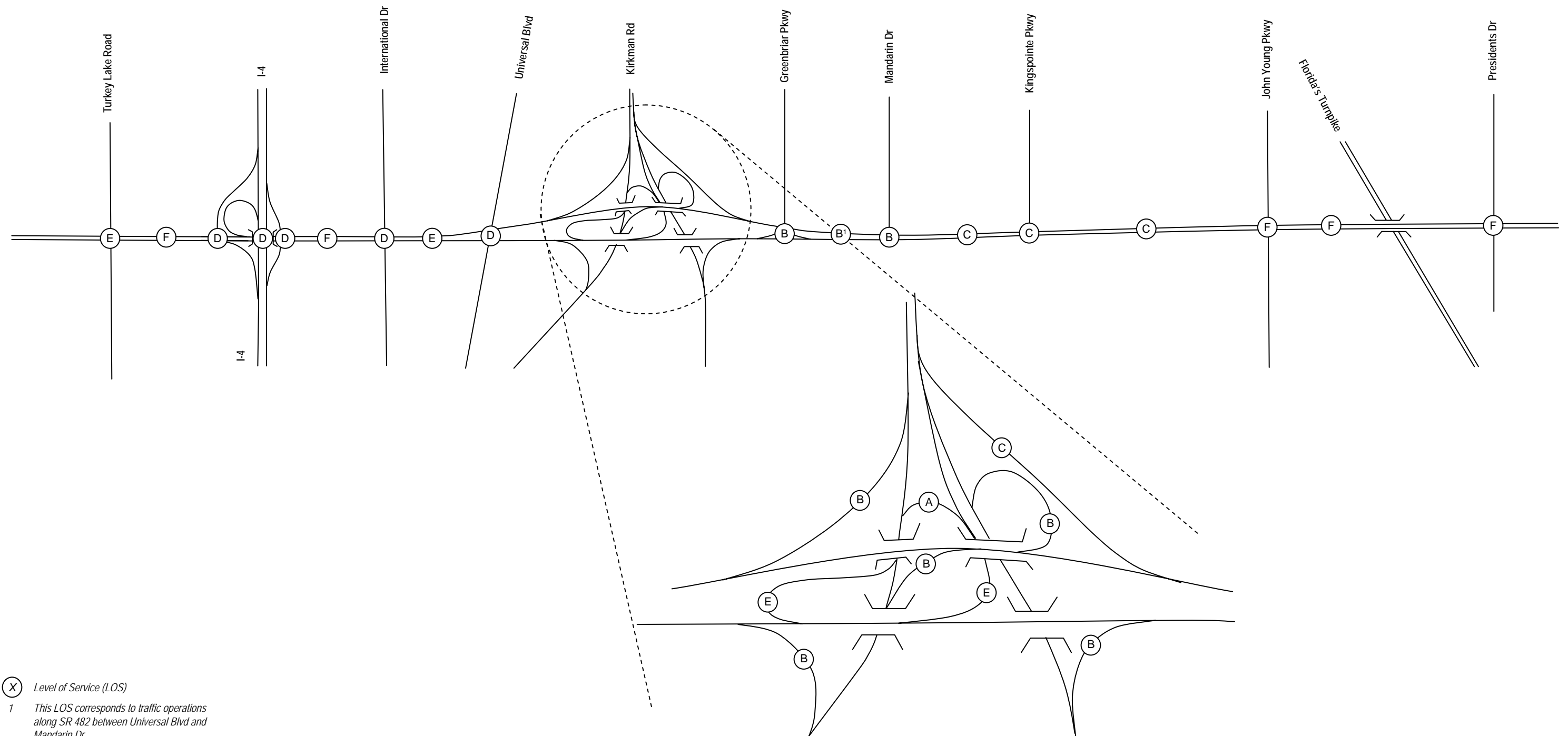


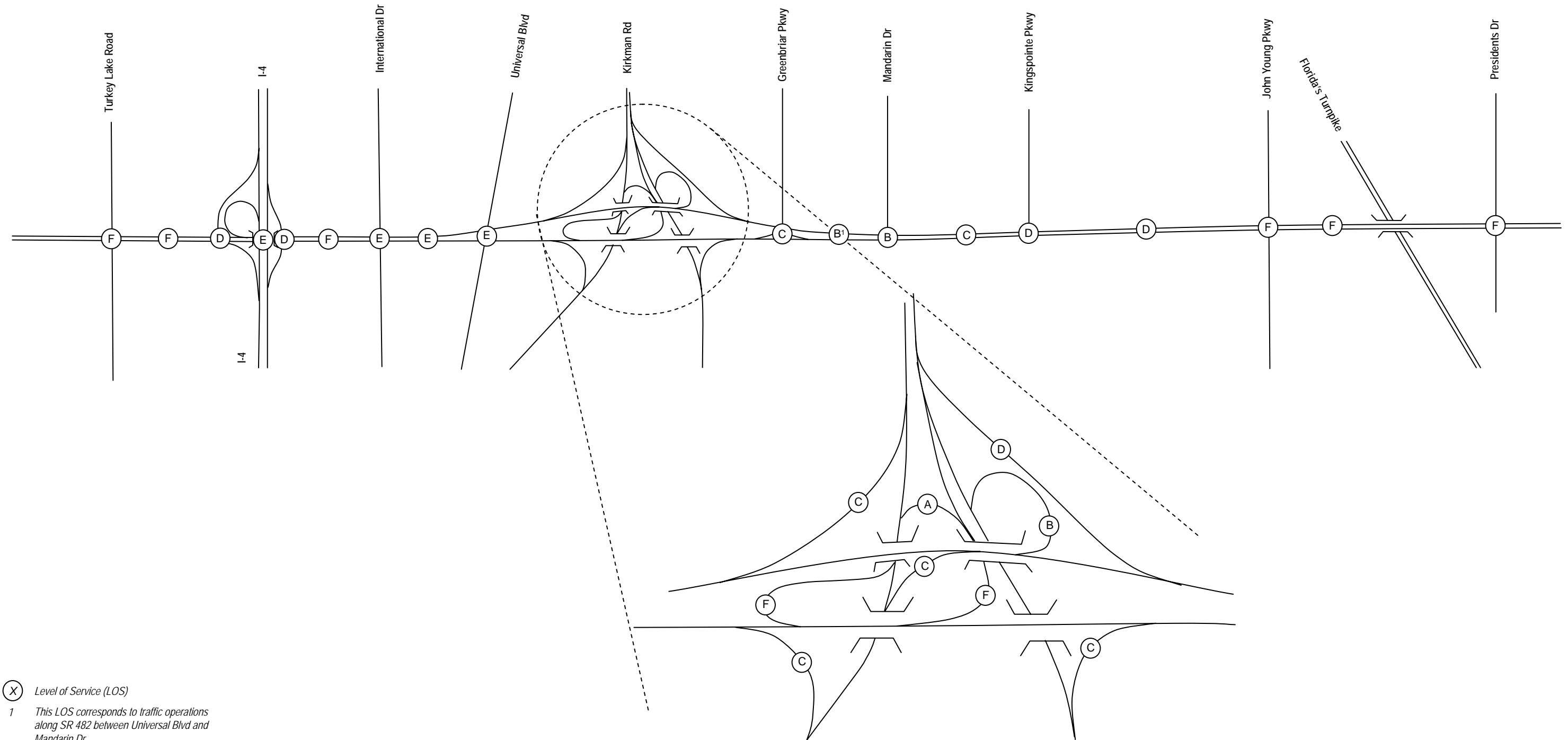
XXX – DHV – Design Hour Volume  
 \* DHV for the Two Lanes on to I-4 Westbound On Ramp  
 \*\* DHV for the Three Through Lanes along SR 482



(X) Level of Service (LOS)  
 1 This LOS corresponds to traffic operations along SR 482 between Universal Blvd and Mandarin Dr.







The actual crash rate for the project corridor is 4.007 compared to a statewide average crash rate of 2.668 for roadways of the same class. The greater accident experience is concentrated between Turkey Lake Road and Universal Boulevard. The actual crash rate in this area is 8.183 compared to a statewide average of 2.668. The remainder of the corridor is below average for crash experience.

**TABLE 3-5. CRASH SUMMARY**

Year	Total Crashes	Wet Crashes	Dark Crashes	Injuries	Fatalities	Pedestrians	Bicycles
2000	152	17	55	120	0	2	0
2001	160	25	62	101	2	6	0
2002	145	15	57	97	0	1	0
2003	148	17	55	87	2	4	1
2004	175	30	67	112	1	6	0
Total	780	104	296	517	5	19	1
<b>Average</b>	156.0	20.8	59.2	103.4	1.0	3.8	0.2
<b>Percentage</b>	-	13.33%	37.95%	-	-	-	-
<b>Statewide Average*</b>	-	13%	30%	-	-	-	-

\*Values taken from Florida Traffic Crash Facts, 2000-2004

Table 3-6 shows the percentages of wet condition and nighttime crashes. A review of the data indicates that the percentages of nighttime crashes for International Drive and SR 423 (John Young Parkway) are significantly above the other major intersections in the corridor.

**TABLE 3-6. WET CONDITIONS AND NIGHTTIME CRASHES**

Intersection	Wet Crash Rate	Dark Crash Rate
I-4	14%	36%
International Dr	17%	47%
Universal Blvd	14%	36%
Kirkman Rd	13%	35%
John Young Parkway	9%	41%
Presidents Drive	15%	31%
Statewide Average	13%	30%

A crash summary by type of collision is provided in *Table 3-7*. Rear-end, angle, left-turn and sideswipe crashes are the most common type of accidents. Rear-end crashes account for approximately 42 percent of all crashes occurring within the project corridor. Angle crashes account for 25 percent. Left-turn and sideswipe crashes both account for 8 percent. These types of crashes are the types that typically occur at intersections.

**TABLE 3-7. CRASH SUMMARY BY TYPE**

Crash Type	2000	2001	2002	2003	2004	Total	Average	Percent
Other	4	4	6	12	10	36	7.20	5%
Angle	23	37	41	44	49	194	38.80	25%
Backed Into	1	1	1	1	0	4	0.80	1%
Animal	0	0	0	1	0	1	0.20	0%
Bicycle	0	0	0	1	0	1	0.20	0%
Construction Barricade Sign	0	0	1	0	0	1	0.20	0%
Moveable Object On Road	0	1	0	0	0	1	0.20	0%
MV Other Road	1	0	1	1	9	12	2.40	2%
Pedestrian	2	6	1	4	6	19	3.80	2%
Head On	3	2	2	2	3	12	2.40	2%
Left-Turn	25	15	10	7	7	64	12.80	8%
Median Crossover	0	0	0	0	1	1	0.20	0%
Concrete Barrier Wall	0	1	1	1	0	3	0.60	0%
Fence	0	0	1	0	0	1	0.20	0%
Guardrail	2	2	1	3	1	9	1.80	1%
Utility Pole/Light Pole	0	1	0	1	0	2	0.40	0%
Other Fixed Object	1	0	0	0	0	1	0.20	0%
Sign/Sign Post	1	1	0	0	2	4	0.80	1%
Tree/Shrub	1	0	0	0	1	2	0.40	0%
Ditch/Culvert	1	0	0	0	1	2	0.40	0%
Occupant Fell From Vehicle	0	0	0	1	0	1	0.20	0%
Overtaken	0	3	0	1	1	5	1.00	1%
Rear-End	68	67	72	52	67	326	65.20	42%
Right Turn	2	2	2	1	3	10	2.00	1%
Separation of Units	0	0	0	0	1	1	0.20	0%
Sideswipe	16	17	5	15	13	66	13.20	8%
Tractor/Trailer Jackknifed	1	0	0	0	0	1	0.20	0%
<b>Total</b>	<b>152</b>	<b>160</b>	<b>145</b>	<b>148</b>	<b>175</b>	<b>780</b>	<b>156.00</b>	<b>100%</b>

*Table 3-8* displays crash summaries by location and by type. The I-4 ramp intersections account for the highest percentage of accidents within the project corridor at 29 percent.

The project corridor exhibits the type of accidents that would be expected in locations where the intersections are operating over capacity. The rear end and angle accidents can be related to drivers violating traffic control devices as they push to reduce their delay. Field observations show a lack of effective guide signing for major tourist destinations, I-

4 and the unique lane use associated with I-4. In addition, congestion related to the close spacing of the Turkey Lake Road and I-4 ramp intersection create poor operations as motorists are unable to access desired lanes when exiting the I-4 ramp.

### 3-8. CRASH SUMMARY BY TYPE AND LOCATION

I-4								
Crash Type	2000	2001	2002	2003	2004	Total	Average	Percent
Other	0	1	3	4	2	10	2.00	1.28%
Angle	7	19	18	13	21	78	15.60	10.00%
Backed Into	1	0	1	0	0	2	0.40	0.26%
MV Other Road	0	0	0	0	3	3	0.60	0.38%
Pedestrian	0	0	0	0	1	1	0.20	0.13%
Head On	1	1	0	0	2	4	0.80	0.51%
Left Turn	15	7	6	0	3	31	6.20	3.97%
Median Crossover	0	0	0	0	1	1	0.20	0.13%
Sign/Sign Post	0	0	0	0	1	1	0.20	0.13%
Tree/Shrub	1	0	0	0	0	1	0.20	0.13%
Ditch/Culvert	1	0	0	0	1	2	0.40	0.26%
Overturned	0	1	0	0	0	1	0.20	0.13%
Rear End	17	7	15	13	15	67	13.40	8.59%
Right Turn	0	1	1	0	1	3	0.60	0.38%
Sideswipe	6	5	0	5	1	17	3.40	2.18%
<b>Total</b>	<b>49</b>	<b>42</b>	<b>44</b>	<b>35</b>	<b>52</b>	<b>222</b>	<b>44.40</b>	<b>28.46%</b>
International Dr								
Crash Type	2000	2001	2002	2003	2004	Total	Average	Percent
Other	1	1	0	1	4	7	1.40	0.90%
Angle	3	7	9	4	5	28	5.60	3.59%
Backed Into	0	0	0	1	0	1	0.20	0.13%
MV Other Road	0	0	1	0	1	2	0.40	0.26%
Pedestrian	1	2	0	3	3	9	1.80	1.15%
Head On	1	0	0	0	0	1	0.20	0.13%
Left Turn	2	2	4	4	0	12	2.40	1.54%
Fence	0	0	1	0	0	1	0.20	0.13%
Rear End	7	13	13	8	7	48	9.60	6.15%
Sideswipe	4	5	1	3	3	16	3.20	2.05%
<b>Total</b>	<b>19</b>	<b>30</b>	<b>29</b>	<b>24</b>	<b>23</b>	<b>125</b>	<b>25.00</b>	<b>16.03%</b>
Universal Blvd								
Crash Type	2000	2001	2002	2003	2004	Total	Average	Percent
Other	0	0	1	1	1	3	0.60	0.38%
Angle	4	2	5	6	7	24	4.80	3.08%
Bicycle	0	0	0	1	0	1	0.20	0.13%
MV Other Road	1	0	0	0	1	2	0.40	0.26%
Pedestrian	0	1	0	1	1	3	0.60	0.38%
Head On	1	0	0	0	0	1	0.20	0.13%
Left Turn	2	2	0	1	1	6	1.20	0.77%
Guardrail	0	0	0	1	0	1	0.20	0.13%
Other Fixed Object	1	0	0	0	0	1	0.20	0.13%
Rear End	7	10	6	9	10	42	8.40	5.38%
Right Turn	1	1	0	0	2	4	0.80	0.51%
Sideswipe	3	3	0	3	1	10	2.00	1.28%
<b>Total</b>	<b>20</b>	<b>19</b>	<b>12</b>	<b>23</b>	<b>24</b>	<b>98</b>	<b>19.60</b>	<b>12.56%</b>

**3-8. CRASH SUMMARY BY TYPE AND LOCATION (CONTINUED)**

<b>Kirkman Rd</b>								
<b>Crash Type</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>Total</b>	<b>Average</b>	<b>Percent</b>
Other	2	1	1	2	2	8	1.60	1.03%
Angle	4	2	3	8	7	24	4.80	3.08%
Construction Barricade Sign	0	0	1	0	0	1	0.20	0.13%
Moveable Object On Road	0	1	0	0	0	1	0.20	0.13%
MV Other Road	0	0	0	0	2	2	0.40	0.26%
Pedestrian	0	0	1	0	1	2	0.40	0.26%
Head On	0	1	1	0	1	3	0.60	0.38%
Left Turn	3	0	0	0	2	5	1.00	0.64%
Concrete Barrier Wall	0	1	0	1	0	2	0.40	0.26%
Guardrail	2	1	1	2	1	7	1.40	0.90%
Utility Pole/Light Pole	0	0	0	1	0	1	0.20	0.13%
Sign/Sign Post	1	0	0	0	1	2	0.40	0.26%
Tree/Shrub	0	0	0	0	1	1	0.20	0.13%
Occupant Fell From Vehicle	0	0	0	1	0	1	0.20	0.13%
Overturned	0	1	0	1	1	3	0.60	0.38%
Rear End	11	13	15	4	12	55	11.00	7.05%
Sideswipe	3	2	4	3	5	17	3.40	2.18%
Tractor/Trailer Jackknifed	1	0	0	0	0	1	0.20	0.13%
<b>Total</b>	<b>27</b>	<b>23</b>	<b>27</b>	<b>23</b>	<b>36</b>	<b>136</b>	<b>27.20</b>	<b>17.44%</b>
<b>John Young Pkwy</b>								
<b>Crash Type</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>Total</b>	<b>Average</b>	<b>Percent</b>
Other	1	0	0	3	1	5	1.00	0.64%
Angle	5	5	5	8	8	31	6.20	3.97%
MV Other Road	0	0	0	1	1	2	0.40	0.26%
Pedestrian	1	0	0	0	0	1	0.20	0.13%
Head On	0	0	0	2	0	2	0.40	0.26%
Left Turn	3	3	0	2	1	9	1.80	1.15%
Concrete Barrier Wall	0	0	1	0	0	1	0.20	0.13%
Sign/Sign Post	0	1	0	0	0	1	0.20	0.13%
Overturned	0	1	0	0	0	1	0.20	0.13%
Rear End	19	16	16	13	14	78	15.60	10.00%
Right Turn	0	0	0	1	0	1	0.20	0.13%
Separation of Units	0	0	0	0	1	1	0.20	0.13%
Sideswipe	0	1	0	1	2	4	0.80	0.51%
<b>Total</b>	<b>29</b>	<b>27</b>	<b>22</b>	<b>31</b>	<b>28</b>	<b>137</b>	<b>27.40</b>	<b>17.56%</b>
<b>Presidents Dr</b>								
<b>Crash Type</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>Total</b>	<b>Average</b>	<b>Percent</b>
Other	0	1	1	1	0	3	0.60	0.38%
Angle	0	2	1	5	1	9	1.80	1.15%
Backed Into	0	1	0	0	0	1	0.20	0.13%
Animal	0	0	0	1	0	1	0.20	0.13%
MV Other Road	0	0	0	0	1	1	0.20	0.13%
Pedestrian	0	3	0	0	0	3	0.60	0.38%
Head On	0	0	1	0	0	1	0.20	0.13%
Left Turn	0	1	0	0	0	1	0.20	0.13%
Guardrail	0	1	0	0	0	1	0.20	0.13%
Utility Pole/Light Pole	0	1	0	0	0	1	0.20	0.13%
Rear End	7	8	7	5	9	36	7.20	4.62%
Right Turn	1	0	1	0	0	2	0.40	0.26%
Sideswipe	0	1	0	0	1	2	0.40	0.26%
<b>Total</b>	<b>8</b>	<b>19</b>	<b>11</b>	<b>12</b>	<b>12</b>	<b>62</b>	<b>12.40</b>	<b>7.95%</b>

The proposed project improvements will serve to significantly enhance the roadway safety by improving capacity and signing. However, it should be noted that many of the drivers are visitors to the area from other parts of the United States and the rest of the world. As such, a supplemental guide signing plan should be considered by Orange County beyond the signing that would normally be used to guide more familiar motorists.

### 3.16 Drainage Plan

Based on a review of existing topographic aerial photography, USGS quadrangle maps, FEMA Flood Insurance Rate Maps (FIRM), SCS soils information, and supporting information, two major basins with seven sub-basins have been identified within the project limits. The Preliminary Pond Siting Report is provided on CD.

The two major drainage basins are headwaters to Shingle Creek and drain south eventually reaching the Kissimmee River. The first major drainage basin is the segment of Sand Lake Road that begins at the cross drain connecting Spring Lake on the north to Little Sand Lake to the south and extends to I-4. The second major drainage basin is from I-4 eastward to Presidents Drive. A portion of the stormwater basins are within floodplain and heavily vegetated areas. In both basins, floodplain areas and surrounding ditches convey stormwater runoff downstream eventually draining into Shingle Creek. The two major drainage basins have drainage sub-basins along Sand Lake Road. The first major drainage basin has two sub-basins contributing stormwater runoff toward the west and eventually to Shingle Creek. The second major drainage basin has five sub-basin areas contributing runoff eventually to Shingle Creek. Three of these sub-basins were studied in the Pond Siting Report. The remaining two basins were not considered, as major roadway improvements are not proposed in these sub-basins.

The project corridor has portions where closed and open stormwater collection systems currently exist along Sand Lake Road. The project corridor has a number of curb and gutter roadway segments that collect stormwater runoff into closed storm sewer systems. Other areas collect runoff in open stormwater systems that convey runoff to the low-lying areas within the corridor study area. Eventually, low-lying areas fill up with stormwater and convey runoff via closed storm sewer systems or open ditch systems to their ultimate outfalls. The drainage basin maps are provided in *Appendix D*.

The proposed drainage for Sand Lake Road will be accommodated primarily by a closed drainage system to collect runoff, and convey it toward offsite stormwater ponds to provide water treatment and detention. The proposed stormwater management will be

accomplished using detention ponds as the recommended alternative. The final drainage solutions will be defined during design in consultation with South Florida Water Management District (SFWMD) and other regulatory agencies.

The five study area sub-basins introduced earlier are discussed below. *Table 3-9* contains a summary of the preferred ponds.

#### 3.16.1 Basins '1' and '2' (Roadway Segments 1 and 2)

Basin '1' begins at the cross drain connecting Spring Lake and Little Sand Lake on Sand Lake Road west of Turkey Lake Road to approximately 500 feet west of Turkey Lake Road. The proposed roadway Basin '1' is 4.01 acres. Basin '2' extends from approximately 500 feet west of Turkey Lake Road, the end of Basin 1, eastward to I-4. The roadway Basin '2' is 4.24 acres. Pond alternatives for Basin '1' are not reasonably available due to the highly developed properties near Sand Lake Road. Therefore, the Pond Siting Report considered combining Basins 1 and 2.

Discussions with the SFWMD revealed their concern about adding any more runoff into the Big Sand Lake which is the receiving water body from Little Sand Lake. It is possible that current water levels in Big Sand Lake might lead to consideration of retaining the 100-year runoff volume in an effort to reduce the impact on the current high water level situation. Changes to the permitting process consistent with this approach are not currently under consideration. However, given local concerns over the situation, a conservative approach to pond sizing was used in the initial pond siting analysis. The Pond Siting Report describes alternatives which could address this problem. They include an exfiltration alternative and alternatives with larger pond sites.

During the Value Engineering review of this project, it was proposed to combine Basins '1' and '2' and only meet today's criteria. This could be done by expanding Pond '2A' or alternatively using exfiltration. Exfiltration is not preferred by Orange County due to maintenance issues and current right of way costs for Pond 2A make the solution competitive with the exfiltration alternative. Therefore, expansion of Pond '2A' is the



**TABLE 3-9. RECOMMENDED PONDS**

ASSESSMENT FACTORS			
	POND '2A'	POND '3A'	POND '3B'
<b>Brief Pond Site Description (Parcel Numbers)</b>	Site is an existing stormwater pond with sod vegetation; and brush palmettos in adjoining parcel as needed, refer to Appendix 'A'. Parcel No. 35-23-28-0000-00-042 & Parcel No. 35-23-28-0000-00-053	Site is consisting of sod & dry-bottom pond vegetation; refer to Appendix 'A'.	Site is consisting of sod & wetland vegetation; refer to Appendix 'A'.
<b>Required Pond Area</b>	0.41 Ac.	2.59 Ac.	5.15 Ac.
<b>Easement Required</b>	NO	NO	NO
<b>Floodplain Impacts</b>	NO	NO	NO
<b>Total Parcel Area</b>	3.56 Ac.+/- and 35.4 Ac.+/-	- - -	- - -
<b>Average Pond Ground Elevation</b>	107.50 +/-ft.	101.0 +/-ft.	101.0 +/-ft.
<b>Soil Names</b>	Tavares Fine Sand, Tavares-Millhopper Fine Sands; Smyrna Fine Sand	Immokalee Fine Sand, Ona Fine Sand, St. Johns Fine Sand, & Basinger Fine Sand, depressional	St. Johns Fine Sand, & Sanibel Muck
<b>Hydrologic Groups</b>	A, B/D	B/D, D	B/D
<b>Estimated Seasonal High Water Table Elevation.</b>	98.0 +/- ft.	96.0 +/- ft.	95.6 +/- ft.
<b>Estimated Pond Design High Water</b>	103.0 +/-	99.0 +/-	97.6 +/-
<b>Outfall (Positive/Landlocked)</b>	Outfall is positive at existing discharge rate and runoff flows southwest to Little Sand Lake and eventually Big Sand Lake.	Outfall is positive and runoff flows eventually east toward Shingle Creek.	Outfall is positive and runoff flows eventually east toward Shingle Creek.
<b>Cultural Resources Impacts</b>	MODERATE	NO	NO
<b>Wetland Impacts</b>	NO	2.56 acres	0.34 acres
<b>Threatened/Endangered Species</b>	NO	NO	NO
<b>Hazardous Materials / Contamination Potential</b>	LOW	LOW	LOW
<b>Utility Conflicts</b>	NO	POTENTIALLY	POTENTIALLY
<b>Existing Zoning</b>	County Property & Planned Development	Roadway – FDOT Property	Roadway – FDOT Property
<b>Future Land Use</b>	County Property & Commercial	Roadway – FDOT Property	Roadway – FDOT Property
<b>COMMENTS</b>	Site is an existing Orange County Pond for Turkey Lake Road & the future Grenada Development and use of this site is uncertain. Therefore, an expanded pond is preferred for Basins 1 & 2 combined. Basin includes 7-11 Store.	Site is within the west infield area of the Kirkman Road Interchange. This site discharges eastward to Shingle Creek. The peak stage is close to the existing low pavement elevations and will require controlling the initial water surface elevation at 95.0 or lower. Connecting Ponds 3A & 3B would enhance the hydraulic performance. Coordination will be needed with Progress Energy on the transmission lines within the pond site.	Site is within the Kirkman Road Interchange and discharges eastward to Shingle Creek. This site provides stormwater treatment for the additional lanes within the existing geometry. Initial pond water surface elevation will require controlling at 95.0 or lower. Connecting Ponds 3A & 3B would enhance the hydraulic performance. Coordination will be needed with Progress Energy on the transmission lines within the pond site.

**TABLE 3-9. RECOMMENDED PONDS**

(continued)

ASSESSMENT FACTORS			
	POND '4A'	POND '5B'	
<b>Brief Pond Site Description (Parcel Numbers)</b>	Site is consisting of sod & wetland vegetation; refer to Appendix 'A'.	Site is consisting of moderate to heavy vegetation; refer to Appendix 'A'. Parcel No. 35-23-28-0000-00-053	
<b>Required Pond Area</b>	4.38 Ac.	5.95 Ac.	
<b>Easement Required</b>	YES	YES	
<b>Floodplain Impacts</b>	YES	NO	
<b>Total Parcel Area</b>	- - -	> 480.0 Ac.	
<b>Average Pond Ground Elevation</b>	101.0 +/-ft.	90.0 +/-ft.	
<b>Soil Names</b>	Sanibel Muck, Symrna Fine Sand, & Basinger Fine sand, depressional	Symrna Fine Sand, & Basinger Fine sand, depressional	
<b>Hydrologic Groups</b>	B/D, D	B/D, D	
<b>Estimated Seasonal High Water Table Elevation.</b>	94.0 +/- ft.	88.0 +/- ft.	
<b>Estimated Pond Design High Water</b>	97.8 +/-	87.1 +/-	
<b>Outfall (Positive/Landlocked)</b>	Outfall is positive and runoff flows eventually east toward Shingle Creek.	Outfall is positive and runoff flows eventually east toward Shingle Creek.	
<b>Cultural Resources Impacts</b>	NO	NO	
<b>Wetland Impacts</b>	1.39 acres	NO	
<b>Threatened/Endangered Species</b>	NO	NO	
<b>Hazardous Materials / Contamination Potential</b>	LOW	LOW	
<b>Utility Conflicts</b>	POTENTIALLY	YES	
<b>Existing Zoning</b>	Roadway – FDOT Property	Industrial IND-3	
<b>Future Land Use</b>	Roadway – FDOT Property	Planned Development	
<b>COMMENTS</b>	Site is within the Kirkman Road Interchange and discharges eastward to Shingle Creek. This site is provides stormwater treatment for the additional lanes within the existing geometry. Initial pond bottom elevation will require controlling at 95.5 or lower. Coordination will be needed with Progress Energy on the transmission lines within the pond site.	This site requires an access easement. This site discharges eastward to Shingle Creek. Initial water surface elevation will require controlling at 84.0 bleeding toward Shingle Creek via Sand Lake Road. Existing gravity sanitary sewer to the Reclaimed Water Plant cuts through pond site & will likely be removed with adjoining development unless roadway construction occurs first.	

recommended alternative. Pond '2A' is proposed for expansion because existing capacity is encumbered and not available for Sand Lake Road improvements.

Pond '2A' will be expanded by approximately 0.41 acres. This provides for the 25-year/24-hour detention volume only. Pond '2A' has a positive outfall to the west down an existing outfall system to Little Sand Lake, eventually reaching Big Sand Lake.

#### 3.16.2 Basin '3' (Roadway Segments 2 and 3)

Basin '3' extends from I-4 eastward to Universal Boulevard. The roadway portion of Basin '3' is 9.55 acres. Only one pond alternative was considered feasible for this basin. Two ponds ('3A' and '3B') will be linked together to serve this basin. The ponds are located within the SR 435 (Kirkman Road) interchange infield areas. The ponds will also drain portions of the SR 435 (Kirkman Road) interchange. Pond '3B' has the contributing area of 19.86 acres from the west portion of the Kirkman Road interchange inclusive of the proposed roadway improvements, pond area, and other infield areas. Ponds '3A' and '3B' are shaped to consider minimizing impacts to the surrounding power poles in the infield areas. Ponds '3A' and '3B' both discharge to the east along Sand Lake Road eventually reaching the Shingle Creek. The combined ponds will provide stormwater treatment and detention of runoff from as far west as International Drive to the Kirkman Road interchange. No new right-of-way is needed.

#### 3.16.3 Basin '4' (Roadway Segment 4)

Basin '4' is from Universal Boulevard eastward to Greenbriar Parkway and is primarily the Kirkman Road interchange. The Basin '4' roadway basin is 26.07 acres. Pond '4A' will serve this basin. Pond '4A' is located within the SR 435 (Kirkman Road) interchange infield area and discharges to the east along Sand Lake Road eventually reaching the Shingle Creek. Pond '4A' is shaped to consider minimizing impacts to the surrounding power poles in the infield areas. No new right-of-way will be required.

#### 3.16.4 Basin '5' (Roadway Segment 5)

Basin '5' is from Greenbriar Parkway east to Kingspointe Parkway. The Basin '5' roadway basin is 23.28 acres with the alternative pond sites located outside the roadway right-of-way. The Pond Siting Report shows Pond '5B' to be preferred. Pond '5B' is near a low area off the roadway right-of-way south of Sand Lake Road on Lockheed – Martin Property. The pond normal water will need to be maintained at a sufficient level to adequately drain the roadway from Kingspointe Parkway back to the pond and discharge east to Shingle Creek. Recent sale of the subject property has revealed new water management opportunities as described in correspondence in *Appendix C*. The new property owner owns additional adjoining property south of the Pond '5B' site. Other properties are owned adjacent to Shingle Creek. In addition, the new owner has suggested that the right of way cost for Pond 5B, based on his purchase price, would increase significantly. Further studies of the owner proposed options should be included in the project design phase.

#### 3.16.5 Basin '6' (Roadway Segments 6 and 7)

Basin '6' extends from Kingspointe Parkway eastward along the existing alignment of Sand Lake Road to the Florida Turnpike. The segment of Sand Lake Road from Shingle Creek to the Florida Turnpike is not considered in this report since 6-lanes of traffic currently exist or are under construction. Thus there are no pond requirements for this segment. The segment of Sand Lake Road from Kingspointe Parkway to Shingle Creek will be widened from four to six lanes. There are no pond sites available within the basin limits due primarily to the existing Shingle Creek wetlands adjoining the roadway right-of-way. The only available area for a pond site would be within the Orange County right-of-way, which is set aside for a single point interchange. The interchange and its related ponds will fully use the available right-of-way. In order to avoid floodplain impacts, a compensating storage solution will be used. Pond '5B' has been sized to provide compensating stormwater treatment for Basin '6'.

### 3.16.6 Basin '7' (Roadway Segment 7)

The limits of Basin '7' are from the Florida Turnpike eastward along the existing alignment of Sand Lake Road to Presidents Drive. This segment is presently under construction and is not considered in this report. However, additional intersection turn lanes are recommended at President's Drive which are not included in the current Sand Lake Road widening. There are no pond sites located within the basin. The minimal additional pavement for a new left turn lane on Sand Lake Road and other side street improvements will be treated in a compensating storage solution using existing FDOT property located north of Sand Lake Road and west of Florida's Turnpike. The Turnpike interchange infield ponds which are discussed in Section 7.9 have been sized to provide compensating stormwater treatment for Basin '7'

### 3.16.7 Drainage Structures

Based on field reviews and existing plans, cross drains are located within the project limits. Two existing cross drains located at Station 4+20 and Station 102+00 are not anticipated to be impacted by additional discharges. Furthermore, future Kirkman Road interchange improvements, by others, will likely impact the cross drain on the east side of the existing interchange (Station 102+00) and the anticipated roadway impacts with the current Sand Lake Road PD&E are not significant enough to warrant replacement at this time. Bridges crossing Shingle Creek will be replaced at a higher elevation with improved span widths. Thus they will improve the regulated floodway. Cross drains and the bridge are described in *Table 3-10*.

**TABLE 3-10. EXISTING DRAINAGE STRUCTURES**

Drainage Feature	Station & Milepost	Cross Drain Size	Bridge Spans	Type	Comments
Existing Cross Drain	4+20 & MP (-)0.384	(2)42"x66"CMP 120 LF	N/A	Connecting Spring Lake & Little Sand Lake	No impact by proposed roadway nor additional flows
		95.68 N, 94.16 S			
Existing Cross Drain	102+00 & MP (+)1.468	(2) 5'x6' Conc. Box	N/A	Connecting Kirkman Rd interchange to Sand Lake Road	No impact by additional flows, future interchange to revise CD.
		92.7+/-			
Existing Bridges @ Shingle Creeks Struct # 750292 WB Struct # 750293 EB	160+00 & MP (+)2.567	Trapezoidal Flood Way	10-Span	Shingle Creek Bridge Crossing	New bridge replacement with no significant floodplain impact.
		79.90 N, 79.00 S			

### 3.17 Geotechnical Considerations

The Natural Resource Conservation Service (NRCS) Soil Survey of Orange County, Florida was reviewed to obtain near surface soil and groundwater information along the recommended roadway alignments. According to the NRCS maps, surficial soils along the Sand Lake Road project alignment consist primarily of fine sands containing varying amounts of silt. Isolated locations of surficial organic deposits are also present within the study area.

The NRCS predicts seasonal high groundwater levels ranging from 2 feet above ground surface (in wetland areas) to greater than 6 feet below ground surface (in upland sand ridges). The majority of the soil units identified in the project area are generally appropriate for use as embankment fill. However, the organic soils (A-8) associated with the Samsula, Hontoon and Sanibel muck soil units will have severe limitations for roadway construction and will likely require removal prior to embankment placement (if not already removed during original roadway construction). Additionally, the depressional soils associated with the Basinger fine sand soil unit often contain surficial muck (A-8) deposits which will also require removal prior to roadway construction. These soil types may affect construction through the Shingle Creek area.

The NRC soil units that are most frequently identified throughout the project study area are Pomello fine sand, St. Johns fine sand and Smyrna fine sand. These soils are classified as nearly level to gently sloping, poorly to moderately well drained sands associated with low ridges and knolls on the flat woods and on broad flats on the flatwoods. Although the above soil units are suitable for use as roadway embankment fill, they all have excessively high seepage rates. These high seepage rates are commonly associated with the granular nature of these soils; therefore, there are slope stability concerns associated with these fine sands that may need to be considered in designing pond excavations.

The roadway auger borings performed along the alignment typically encountered fine sand to fine sand with silt (A-3) and silty fine sand (A-2-4) throughout the depths explored. A notable exception to this profile included layers of mucky fine sand (A-8), which was encountered at Stations 81+00 and 174+50, which correspond to the SR 435 (Kirkman Road) and Shingle Creek area, respectively. Mucky fine sand was encountered at 4.5 to 5.0 feet at Station 81+00 and 0.0 to 5.0 feet at Station 174+50.

It should be noted the project vicinity is an area of “high recharge” to the Floridian aquifer, and an area where the risk of sinkhole formation is high compared to other regions in Florida. However, on the basis of SPT borings taken to date, the risk of sink holes on this corridor is considered low when compared to Central Florida background risk.

The Geotechnical Report is on a CD in the back of this report.

### **3.18 Special Considerations Affecting Selection of Recommended Alternative**

#### **3.18.1 No-Build**

*Table 3-11* provides a comparison of the build and no-build alternatives. The no-build alternative has no improvement costs and no impacts to the natural environment. However, traffic safety and capacity would not be addressed by the no build alternative. The extensive delay created by growing traffic demand and no increased capacity would

TABLE 3-11. ALTERNATIVES EVALUATION MATRIX

	No Build Alternative	Preferred Build Alternative
<b>DESCRIPTION</b>		
<b>Description</b>	SR 482 (Sand Lake Road) would consist predominantly of a four-lane divided roadway. However, there would be portions of SR 482 (Sand Lake Road) that include five-lane and six-lane sections. From Turkey Lake Road to International Drive it would consist of six lanes. It would include six lanes from just west of SR 423 (John Young Parkway) to Presidents Drive.	The project widens all of the sections of SR 482 (Sand Lake Road) to six lanes along with additional turn lanes at selected intersections. The proposed improvements would provide additional pedestrian and bicycle facilities along the corridor.
<b>ENGINEERING</b>		
<b>Access Management</b>	No access control would be added to the corridor; uncontrolled left-turns into and out of driveways would create conflicts, thereby reducing levels-of-service and increasing crash potential.	Full median openings would become directional openings at three locations and a median prohibiting left turns would be constructed on the south approach of International Drive. Good accessibility would be retained for affected properties along the corridor.
<b>Pedestrian/Bicycle Facilities</b>	Few pedestrian facilities would be provided. Continuous bicycle lanes would not be provided.	Proposes 4-foot bicycle lanes or paved shoulders adjacent to the outside lanes throughout the full project. Provides sidewalks along corridor except in Kirkman Interchange area and on the north side of the road east of Shingle Creek. Sidewalk would range from 5 to 12 feet.
<b>Level of Service (LOS)</b>	The existing facility does not have adequate capacity to accommodate future traffic demand. No improvements to SR 482 (Sand Lake Road) would result in segments of this roadway operating below LOS standards at LOS F by 2010 with traffic expected to increase in the future while capacity does not improve.	The operating conditions of the improved corridor would be within acceptable LOS standards. Most of the corridor west of SR 435 (Kirkman Road) would operate at LOS D or better by 2020. Most of the corridor east of SR 435 (Kirkman Road) would operate at LOS C or better by 2020. Congested conditions would occur at key intersections by 2030 but the congestion would be less than in the no build condition.
<b>Safety</b>	As this alternative does not improve SR 482 (Sand Lake Road), increased congestion and consequently an increase in number of accidents could result.	A six-lane divided roadway would provide additional needed capacity to the corridor, relieving congestion. A less congested roadway provides safer movements of vehicles within the corridor.
<b>Consistency with Local Transportation Plans</b>	Not consistent with METROPLAN Orlando Long Range Transportation Plan. Not consistent with Orange County long range planning. Not consistent with Level of Service objectives in adopted comprehensive plans.	Consistent with METROPLAN Orlando Long Range Transportation Plan and Orange County long range planning. Consistent with Level of Service objectives in adopted comprehensive plans.
<b>Drainage/Water Quality</b>	No impact	Most new runoff would be accommodated in ponds meeting standard state water management district stormwater requirements. Areas where stormwater treatment is not feasible would have compensating water quality measures according to permitting rules.  The portion from Kingspointe Parkway to west of SR 423 (John Young Parkway) would be collected into roadside swales prior to discharging runoff into Shingle Creek. The bridge improvement would consider providing methods for conveyance and treatment as much as reasonably possible.
<b>Utilities</b>	No impact	Would require the relocation or adjustment of some of the utility facilities within the project corridor. Preliminary cost estimates are approximately \$1.7 million. These are all costs to utilities.  In addition, it will be necessary to relocate a lift station at a project cost of \$750,000 plus right-of-way.
<b>ENVIRONMENTAL</b>		
<b>Historic/Archaeological</b>	No impact	Nine proposed pond locations were evaluated along the project corridor for archaeological site probability. Pond 2B was found to have a high archaeological site probability. Ponds 2C, 5A and 5B were found to have a moderate archaeological site probability. Pond 2A was found to have a moderate/low archaeological site probability. Ponds 3, 3A, 4A and 4B were found to have a low archaeological site probability. Pond siting alternatives in basins 1/2 and 5 are limited. Preferred Pond 2B1 has a high probability of archaeological significance. Pond 5B has a moderate probability of archaeological significance. Field tests revealed no archaeological artifacts. There are no historical or archaeological impacts expected with the project.
<b>Relocation</b>	No impact	No impact
<b>Right-of-Way Acquisition</b>	No impact	9.0 acres of right-of-way would be required from 41 parcels. There would be no residential or business relocations.
<b>Community Impacts</b>	No changes to the existing SR 482 (Sand Lake Road) roadway would result in increased congestion and would likely result in increased accidents that would degrade the quality of life to the community.	Several changes in access patterns with improved overall access due to reduced congestion and improved access management. No significant effect on land development or land use patterns is expected.
<b>Parks/Recreation Areas (Section 4(f))</b>	Does not accommodate Shingle Creek Trail.	Coordination has been provided for the Shingle Creek Recreational Trail crossing. No Section 4(f) impacts are expected.
<b>Wetlands/Surface Waters</b>	No impact	3.6 acres of wetlands and 5.4 acres of other surface waters would be impacted by mainline improvements. Pond sites would impact an additional 5.3 acres of wetlands and 0.5 acre of other surface waters. Total impact would be 14.8 acres. The majority of impacts would be to wet ditches and swales associated with the permitted drainage system. The majority of impacted wetland habitats are small, fragmented, low-moderate quality wetlands. No high-quality wetlands would be impacted.



**TABLE 3-11. ALTERNATIVES EVALUATION MATRIX (CONTINUED)**

<b>Threatened and Endangered Species</b>	No impact	Minimal impact to wildlife habitat for roadway widening. Majority of impacted habitat would consist of fragmented or isolated habitat. 8.98 acres of wetland/other surface water habitat and 0.42 acres of upland habitat would occur. For Ponds 2B/2B1, minimal impact to wildlife habitat would occur. Pond sites would impact 5.8 acres of wetland/other surface water habitat; 2.2 acres of upland low quality scrub habitat; and 5.8 acres of upland moderate quality pine flatwood habitat.
<b>Contamination</b>	No impact	15 low-risk sites, 2 medium-risk sites and 9 high-risk sites have been identified that could potentially impact the project.
<b>Air Quality</b>	Severe congestion would have a negative impact on air quality.	Reduced congestion would reduce the negative impacts to air quality.
<b>Noise</b>	No impact	No noise sensitive sites are located within the project limits of SR 482 (Sand Lake Road)
<b>COST (Million)</b>		
<b>Construction</b>	None	\$50.5 <sup>(1)</sup>
<b>Mitigation</b>	None	\$1.5
<b>Right-of-Way</b>	None	\$22.5 <sup>(2)</sup>
<b>Design</b>	None	\$5.5
<b>CE&amp;I (10%)</b>	None	\$5.1
<b>Construction Incentive (5%)</b>	None	\$2.5
<b>Project Cost</b>	None	\$87.6 <sup>(3)</sup>

<sup>(1)</sup> LRE Dated 8/15/06

<sup>(2)</sup> Right-of-way cost dated 8/14/06

<sup>(3)</sup> Does not include Turkey Lake side street improvements (total cost = \$2.1 M) which are not included in the initial construction project

negatively impact the roadway system and increase crash potential. Delay to motorists would be unacceptable. Therefore, the recommended alternative is the build alternative.

### 3.18.2 Overview of the Build Alternative

The build alternative for Segments 1, 2, and 3 includes 11-foot lanes within a minimized right-of-way. Bike lanes are added on both sides from Turkey Lake Road to Universal Boulevard. Other alternatives with 12-foot lanes were considered and it was determined that the right-of-way impacts and costs could be substantially reduced by using 11 foot lanes. In addition, the use of a 40 MPH design speed in conjunction with 11-foot lanes allowed a reduction in minimum border width to 10 feet, further reducing the required right-of-way width. The following is a discussion by segment.

### 3.18.3 Segment 1 – 1,600 Feet West of Turkey Lake Road to Turkey Lake Road

Segment 1 is primarily a transition segment from four lanes to six lanes. The existing four lane section is generally centered in a 120 foot right-of-way. This right-of-way is adequate to accommodate six lanes and bike lanes with the existing median width of 21 feet and a curb and gutter section. A median width variance will not be necessary since this section is a County roadway. There are no plans by Orange County to six lane this section or to provide bike lanes. In fact, there is currently an informal understanding that the roadway will not be six-laned except for the needed improvements at the Turkey Lake Road intersection. The recommended improvement will require added right-of-way in order to provide dual left-turn lanes at the intersection and to retain the existing right turn lane. Alternatives considered widening to the south, north, and both. Alternatives also considered sections with and without bike lanes. The most cost effective and least impacting improvement widens on both sides to use available right-of-way and limits the required right-of-way needed for widening to the north side. Bike lanes are not provided in the recommended alternative due to the fact that added right-of-way would be needed and there are no plans to continue the bicycle lanes to the west. Orange County concurs with this approach.

#### 3.18.4 Segment 2 – Turkey Lake Road to International Drive

The widening west of Turkey Lake Road generally sets the alignment east of Turkey Lake Road. In addition, the alignment of Segment 2 is controlled by the typical section under I-4 and the alignment of Segment 1.

East of Turkey Lake Road, widening occurs on the north and south side to help reduce impacts to the 7-Eleven on the north side. The 7-Eleven retention pond area will be impacted. Right-of-way acquisition costs can be minimized by accepting the existing site drainage into the roadway drainage system. The proposed pond for this sub-basin has been sized to accommodate the 7-Eleven drainage.

Right-of-way is added on the south side east of I-4 in order to retain and extend the existing right-turn lane on the south side and the existing frontage road circulation and I-4 auxiliary lane on the north side.

#### 3.18.5 Segment 3 – International Drive to Universal Boulevard

A number of different alignments were considered in this segment. These ranged from widen all to the north to widen all to the south with alternatives for widening on both sides. The minimum impact occurs by acquiring right-of-way on both sides. A total of 25.5 feet will typically be acquired. Up to 10 feet will be acquired from the south side, such that existing circulation functions at the Wyndham Resort can be retained. The remaining right-of-way will be acquired from the north side. A portion of the drainage from the adjacent Fishbones site may be accommodated in the road drainage system to allow for some parking replacement. Widening further to the south or north would potentially create much greater impacts to the adjacent properties.

#### 3.18.6 Segments 4 through 7 – Universal Boulevard to Presidents Drive

Segments 4 through 7 have no unique right-of-way restrictions limiting the typical section. Thus a standard typical section was used throughout the remainder of the corridor.

### 3.19 Project Costs

Costs for the project are listed in *Table 3-12*. Construction costs were estimated using the FDOT LRE System. Right-of-way and design costs were provided by the FDOT. The project has been segmented for design and construction. Segment costs are provided in *Appendix G*.

**TABLE 3-12. PROJECT COSTS**

<b>Cost (Millions)</b>	
Construction	\$50.5 <sup>(1)</sup>
Mitigation	\$1.5
Right-of-Way	\$22.5 <sup>(2)</sup>
Design	\$5.5
CE&I (10%)	\$5.1
Construction Incentive (5%)	\$2.5
<b>Total Project Cost</b>	<b>\$87.6 <sup>(3)</sup></b>

<sup>(1)</sup> LRE date 8/15/06

<sup>(2)</sup> Right-of-way cost date 8/14/06

<sup>(3)</sup> Does not include Turkey Lake Road side street improvements (total cost = \$2.1 M) which are not included in the initial construction project.

## **4.0 SUMMARY OF ENVIRONMENTAL IMPACTS**

### **4.1 ETDM Concerns Addressed in Study**

This section of the report addresses environmental impacts including the considerations raised during the Programming Phase and summarizes the findings of the environmental technical studies. Each item is discussed in terms of how the recommended alternative addressed that concern. Avoidance and minimization measures are discussed here, as well as those matters associated with the environmental permits.

### **4.2 Avoidance/Minimization Measures**

All measures have been considered to avoid and minimize impact to wetlands and other surface waters. Construction of the Shingle Creek bridges will occur along the existing alignment and spans will be lengthened. This will minimize impacts to adjacent wetlands. Pond locations have been selected to minimize impacts to wetlands. Impacts to wetlands are limited in this project to mostly poor quality isolated wetlands that primarily occur in existing roadway drainage features. Best Management Practices (BMPs) and erosion control measures will be implemented during construction.

### **4.3 Environmental Impact Evaluation**

The following provides the supporting information for the Environmental Class of Action Determination for this project. The Class of Action Determination is contained in *Appendix H*. There are no significant impacts associated with this project.

#### **4.3.1 Social Impacts**

##### **4.3.1.1 Land Use Changes**

In general, the existing land use within the project area consists primarily of commercial uses, including several hotels, restaurants and retail shops, office, institutional, industrial and conservation uses. In addition, some undeveloped fallow agricultural lands are also present. No residential areas are present adjacent to Sand Lake Road, within the project area. Major facilities within the Sand Lake Road portion of the project area include

Wyndham Resort, Orange County South Water Reclamation Facility, Lockheed Martin, Shingle Creek Conservation Areas, Florida's Turnpike, and I-4. Tangelo Park Elementary School and Florida Metropolitan University are also found near the project area.

Sand Lake Road is essentially a built-out corridor with some exceptions. The most dominant undeveloped parcel of land is owned by Lockheed Martin and under contract for sale to Universal City Property Management. This land, located on the south side of Sand Lake Road, is identified in the Orange County's Future Land Use Map as a Planned Development which includes commercial uses along Sand Lake Road and multi-family residential behind the commercial uses. No substantial effect on land development or land use patterns is expected as the land use pattern for this area is already well established. New development will occur along the corridor with or without the roadway improvements.

Changes in future land uses have been identified to be consistent with METROPLAN ORLANDO's Long Range Transportation Plan (LRTP) for 2025, METROPLAN ORLANDO's Transportation Improvement Program (TIP) for the fiscal years 2004/05 – 2008/09, approved on July 14, 2004, Orange County's Comprehensive Policy Plan, and the City of Orlando Comprehensive Plan. The proposed project is consistent with the LRTP.

#### 4.3.1.2 Community Cohesion

The proposed widening of Sand Lake Road would reduce congestion and enhance safety and thus have a social benefit. The pattern of development has been established along the Sand Lake Road corridor. No residential communities are located along Sand Lake Road. The area in the western portion of the project supports the tourism trade with hotels and restaurants prevalent along the corridor, particularly between I-4 and Universal Boulevard. The widening of Sand Lake Road will not isolate or split existing neighborhoods/residential areas or impact any community facilities. Some minor business impacts will occur, particularly within Segments 1, 2 and 3. These minor

impacts include reduction in the number of parking spaces, modifications to internal traffic circulation, landscaping and property takes. These issues will be looked at in detail during design in order to reduce and/or mitigate impacts to each business. Access to all businesses will be maintained. Some median opening changes will occur due to access management requirements (see Section 3.8) which could cause minor inconveniences but will not cause substantial impact. Sufficient locations for U-turns are available in the corridor. No other community concerns have been identified and no impacts to cultural facilities will occur.

The new Turnpike interchange will improve the existing road network. Existing interchanges to the north and south of Sand Lake Road include I-4 and the Beachline, respectively. Currently drivers with destinations on or around Sand Lake Road must exit at either of these two interchanges and then travel the surface roads to reach their destination. The new interchange will allow drivers to directly access Sand Lake Road which will bring them closer to their destination and reduce congestion at the other interchanges and surface roads. However, traffic on Sand Lake Road will increase.

#### 4.3.1.3 Relocation Potential

The recommended alternative does not require any residential or business relocations. A total of 6.8 acres of right-of-way for ponds and 2.4 acres of right-of-way for widening will be required. A total of 41 parcels will be acquired for the Sand Lake Road improvements. A limited number of signs will be impacted by right-of-way acquisition. These signs will be acquired by the right-of-way department. No sign relocations are anticipated.

The proposed project, as presently conceived, will not displace any residences or businesses within the community. Should this change over the course of the project, the Florida Department of Transportation will carry out a Right of Way and relocation program in accordance with Florida Statute 339.09 and the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (Public Law 91-646 as amended by Public Law 100-17). The brochures that describe in detail the Department's

relocation assistance program and Right of Way acquisition program are “*Your Relocation: Residential*”, “*Your Relocation: Business, Farms and Nonprofit Organizations*”, “*Your Relocation: Signs*” and “*The Real Estate Acquisition Process*.” All of these brochures are distributed at all public hearings and made available upon request to any interested persons.

#### 4.3.1.4 Community Services

Community services within the project area are limited. Community services within the project corridor include a church, an elementary school, and a fire station:

- St. Nicolas Catholic Church (5135 Sand Lake Road)
- Orange County Fire Rescue Station #22 (4765 Sand Lake Road)
- Tangelo Park Elementary School (5115 Anzio Street)
- Florida Metropolitan University (2411 Sand Lake Road)

In addition, numerous retail stores and restaurants are present. There are no other community resources located within the project area. No impact to any of these facilities is anticipated.

#### 4.3.1.5 Title VI Considerations

This project has been developed in accordance with the Civil Rights Act of 1964, as amended by the Civil Rights Act of 1968.

#### 4.3.1.6 Controversy Potential

A Public Involvement Program (PIP) was conducted for this project in order to obtain comments/input from the public, government officials, and agencies. The major elements of this program to date consist of the ETDM evaluation, an Advanced Notification (AN) package, Public and Agency Kickoff Meetings, a Public and Agency Alternatives Meetings, several individual meetings with key stakeholders, study advisory team meetings, and a public hearing.

The Sand Lake Road project has been evaluated through the FDOT’s new ETDM process. No adverse or substantial concerns were received from the responding agencies.



The Degree of Effect identified by all of the responding agencies was “Minimal to None.” In addition, an Advanced Notification (AN) package was originally distributed to local, state and federal agencies and representatives on July 11, 2005. Responses were received from nine agencies including FDEP, East Central Florida Regional Planning Council, Florida Fish and Wildlife Conservation Commission (FWWCC) Florida Department of State, South Florida Water Management District, City of Orlando, Orange County Environmental Protection Division and US Department of Commerce – National Oceanic and Atmospheric Administration. Due to the addition of a new interchange with the Florida’s Turnpike, a new Advanced Notification package was distributed to the agencies on December 19, 2005. Responses were received from ten agencies. No adverse comments were received on the project. *Appendix I* includes a list of agencies that responded along with their comments and responses to their comments, as appropriate.

A Public Information Meeting was held on September 9, 2005 to present preliminary information on the project and to obtain public input. A Public Alternatives Meeting was held on January 19, 2006. This meeting provided more detailed engineering information and allowed further public input. A Public Hearing was held on May 25, 2006. The preferred alternative was described in a formal presentation. Comments from the public were solicited and recorded by a court reporter. No adverse comments were received regarding the project, however, concerns were raised by several of the business owners relating to impacts to their property. The issues raised cannot be addressed at this time due to the need for additional engineering design and thus will be further addressed during the design phase. All issues identified throughout the public involvement process are discussed in Section 6.0 – Summary of Public Involvement.

#### 4.3.1.7 Utilities and Railroads

All of the utilities in the corridor have been identified and coordination with the utilities companies has been initiated. It is anticipated that utility adjustments will be required. Continued coordination with each of the utility companies will occur throughout the

design phase. See Section 3.10 for specific information on utilities present within the project corridor and coordination activities that have occurred.

#### 4.3.2 Cultural Impacts

##### 4.3.2.1 Section 4(f)

Two potential Section 4(f) resources were identified within the project area: the Shingle Creek conservation lands and the Shingle Creek Trail. The conservation lands associated with the Shingle Creek basin are not identified as recreational lands in the County's Land Use maps and are also under private ownership and are not considered a Section 4(f) resource. However, the Shingle Creek trail is considered a recreational trail and therefore a potential Section 4(f) resource. The Shingle Creek Trail is part of the Shingle Creek Regional Trail which is planned to extend from Ocoee Road south (West Orange Trail) in Orange County south to the City of Kissimmee in Osceola County. The Regional Trail consists of many segments with different government entities responsible for different sections. The Regional Trail extends through the following jurisdictions: City of Orlando, Orange County, Osceola County and City of Kissimmee.

The Shingle Creek Trail extends from the Mall of Millenia to Central Florida Parkway and is under the jurisdiction of the City of Orlando. The Shingle Creek Trail is divided into three segments:

- Mall at Millenia to Florida's Turnpike
- Florida's Turnpike to Sand Lake Road
- Sand Lake Road to Central Florida Parkway

The Sand Lake Road PD&E Study falls into Segment 3 which begins on the north side of Sand Lake Road and runs within the FDOT right-of-way until it reaches Shingle Creek and then crosses to the south of Sand Lake Road and runs along the east side of the creek (i.e., along the existing berm). The Shingle Creek Trail is proposed to cross Sand Lake Road at Shingle Creek.

According to Bill Thomas of Orange County, Orange County is managing the section of the Trail from south of Sand Lake Road to Central Florida Parkway. The City of Orlando is managing the section north of Sand Lake (Oakridge to Sand Lake). The actual crossing at Sand Lake is a grey area but is probably going to be handled by the County due to cost. Extensive coordination with the City of Orlando, Orange County, the FDEP Office of Greenways and Trails has occurred to determine if the Sand Lake Road project can accommodate the Trail crossing at the Shingle Creek. This coordination resulted in the incorporation of the Trail under Shingle Creek with this project. A 5-foot wide sidewalk will be provided on the north side of Sand Lake Road from Kingspointe Parkway to the Shingle Creek Trail. A 12-foot sidewalk will be provided from the trail to the Shingle Creek Bridge. The Shingle Creek Bridge will provide a 14-foot sidewalk on the north side and will connect to a 14-foot wide switchback ramp to serve the Shingle Creek Trail. The twin bridges over Shingle Creek will be reconstructed. The trail will be 12-feet wide under the bridges.

The proposed project will not use property from the Shingle Creek Trail. In addition, the proposed project will accommodate the trail by constructing the portion of the trail at the Shingle Creek Bridge. FHWA has determined Section 4(f) does not apply.

#### 4.3.2.2 Historic Sites/Districts and Archeological Sites

A Cultural Resource Assessment, conducted in accordance with the procedures contained in 36CFR Part 800 and including background research and a field survey coordinated with the State Historic Preservation Officer (SHPO), was preformed for the project. No archeological or historical sites or properties were identified, nor are any expected to be encountered during subsequent project development. The Federal Highway Administration, after consultation with the SHPO, has determined that no resources listed or eligible for listing on the National Register of Historic Places will be affected.

The SHPO coordination letter is included in *Appendix J*.

#### 4.3.2.3 Recreation Areas

The proposed Shingle Creek Trail which is proposed to cross Sand Lake Road at Shingle Creek, is the only recreational facility identified in the project area. As discussed in Section 4.3.2.1, this facility will be accommodated by the Sand Lake Road project.

#### 4.3.3 Natural Environment

##### 4.3.3.1 Wetlands

In accordance with Executive Order 11990, Protection of Wetlands, Federal Highway Administration (FHWA) Technical Advisory T6640.8A, and the FDOT PD&E Manual, the extent and types of wetlands in the study area were documented.

Wetlands occurring within the project areas were identified and incorporated into this study. Each wetland site was identified in the field using the delineation methods described in the U.S. Army Corps of Engineers (USACOE) “Federal Manual for Identification and Delineation of Wetlands”, dated 1987, and 62-340 F.A.C., “Delineation of the Landward Extent of Wetlands and Surface Waters”. Wetland classifications occurring within the site were determined based on FDOT’s Florida Land Use, Cover and Forms Classifications Systems (FLUCFCS) (January 1999) and the USFWS Cowardin classification method.

Numerous small, isolated palustrine forested wetlands and some freshwater emergent wetlands are present within the entire project area. The larger wetland areas are associated with the Shingle Creek basin. Within the Sand Lake Road corridor, much of the wetland habitat consists of stormwater treatment areas and ditches/swales. The wetland investigation identified 37 wetland (W) habitats and 35 other surface waters (SW) along Sand Lake Road.

Fifteen different classifications were defined for the wetlands and surface waters along Sand Lake Road including: Streams and Waterways (FLUCFCS 510 / USFWS R2UB), Wet Ditch/Swale (FLUCFCS 511 / USFWS- PEM2), Upland-Cut Swale (FLUCFCS 5111 / USFWS- PEM2), Reservoirs – FLUCFCS 534 / USFWS- L1UB, Inland Ponds

and Sloughs (FLUCFCS 616 / USFWS- PFO2 & PEM1), Mixed Wetland Hardwoods (FLUCFCS 617 / USFWS- PFO1), Willow and Elderberry (FLUCFCS 618 / USFWS- PSS1), Exotic Wetland Hardwoods (FLUCFCS 619 / USFWS- PFO1), Cypress Wetland (FLUCFCS 621 / USFWS- PFO2), Hydric Pine Flatwoods (FLUCFCS 625 / USFWS- PFO2), Slash Pine Swamp Forest (FLUCFCS 627 / USFWS- PFO2), Wetland Forested Mix (FLUCFCS 630 / USFWS- PFO1), Wetland Scrub (FLUCFCS 631 / USFWS- PSS1), Freshwater Marsh (FLUCFCS 641 / USFWS- PEM2), Wet Prairie (FLUCFCS 643 / USFWS- PSS1).

The forested wetlands associated with Shingle Creek are the largest wetland feature within the project area, and are considered high quality wetlands with bald cypress (*Taxodium distichum*) as the dominant wetland vegetation. A few areas other than the forested wetlands associated with Shingle Creek also contain stands of bald cypress and wetland hardwoods such as sweetbay (*Magnolia virginiana*) and swamp bay (*Persea palustris*). These areas are located along the corridor in the vicinity of John Young Parkway, the SR 435 (Kirkman Road) interchange, and along the I-4 off-ramp.

Impacts to wetlands/other surface waters were determined based on the concept plans, preliminary maintenance of traffic and the preliminary drainage concepts. A footprint of impact was developed for each alternative based on a worst-case scenario (i.e., includes potential construction impacts). This footprint was incorporated into the project GIS habitat maps to calculate impacts. The results indicated that 3.57 acres of wetlands and 5.41 acres of other surface waters will be impacted by the proposed improvements along Sand Lake Road. Impacts to wetlands due to construction of ponds along the Sand Lake Road range will be 5.27 acres, and impacts to other surface waters from ponds along Sand Lake Road will be 0.52 acre. The Kirkman Road southbound to westbound ramp realignment will impact 3.29 acres of wetlands. The maps illustrating the wetland and surface waters impacts are shown in *Figures 4-1 through 4-5*, respectively.

A summary of impacts to wetlands and other surface waters is shown in *Tables 4-1 and 4-2*. Impacts to wetlands and other surface waters have been minimized to the extent

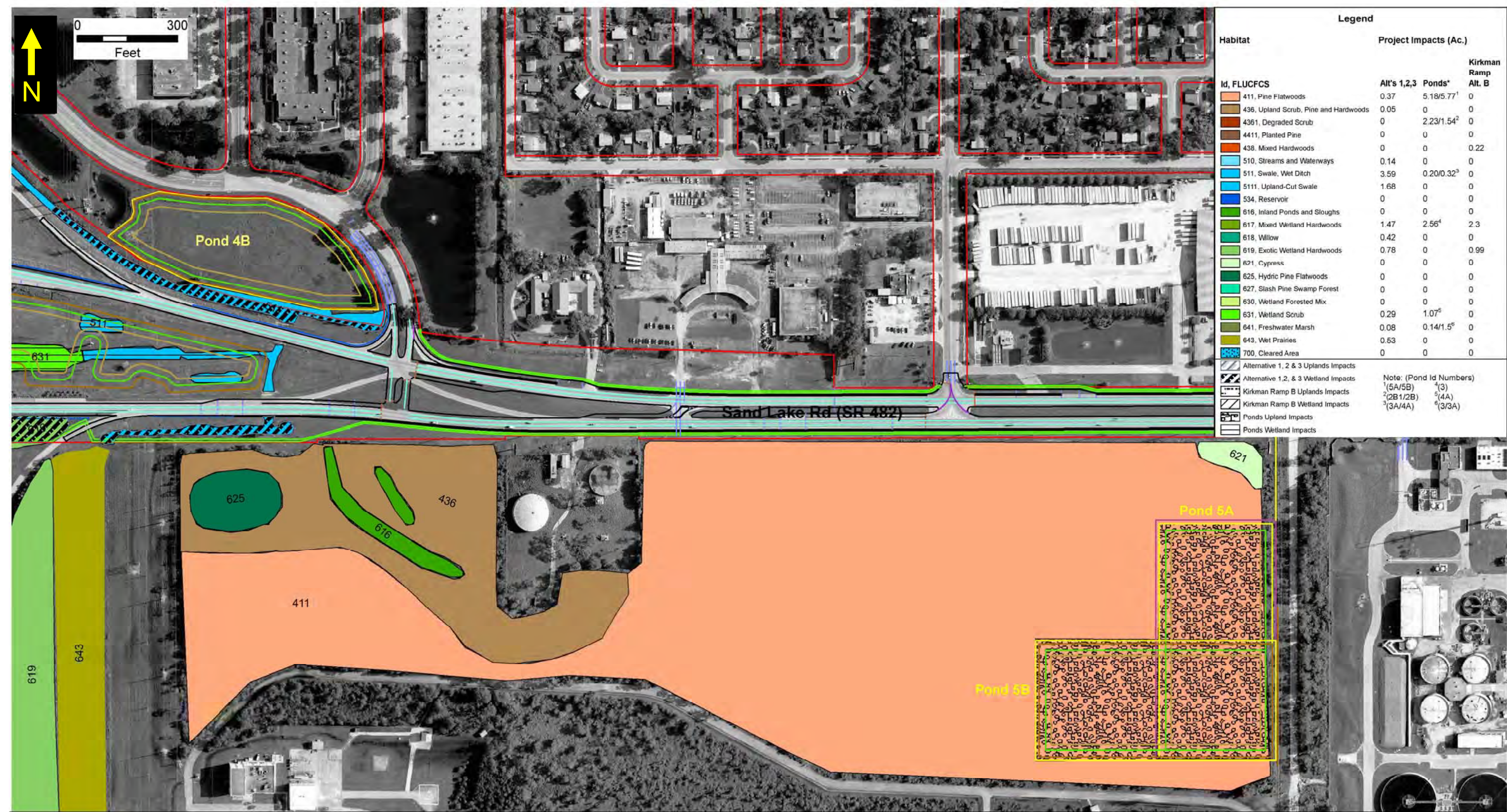








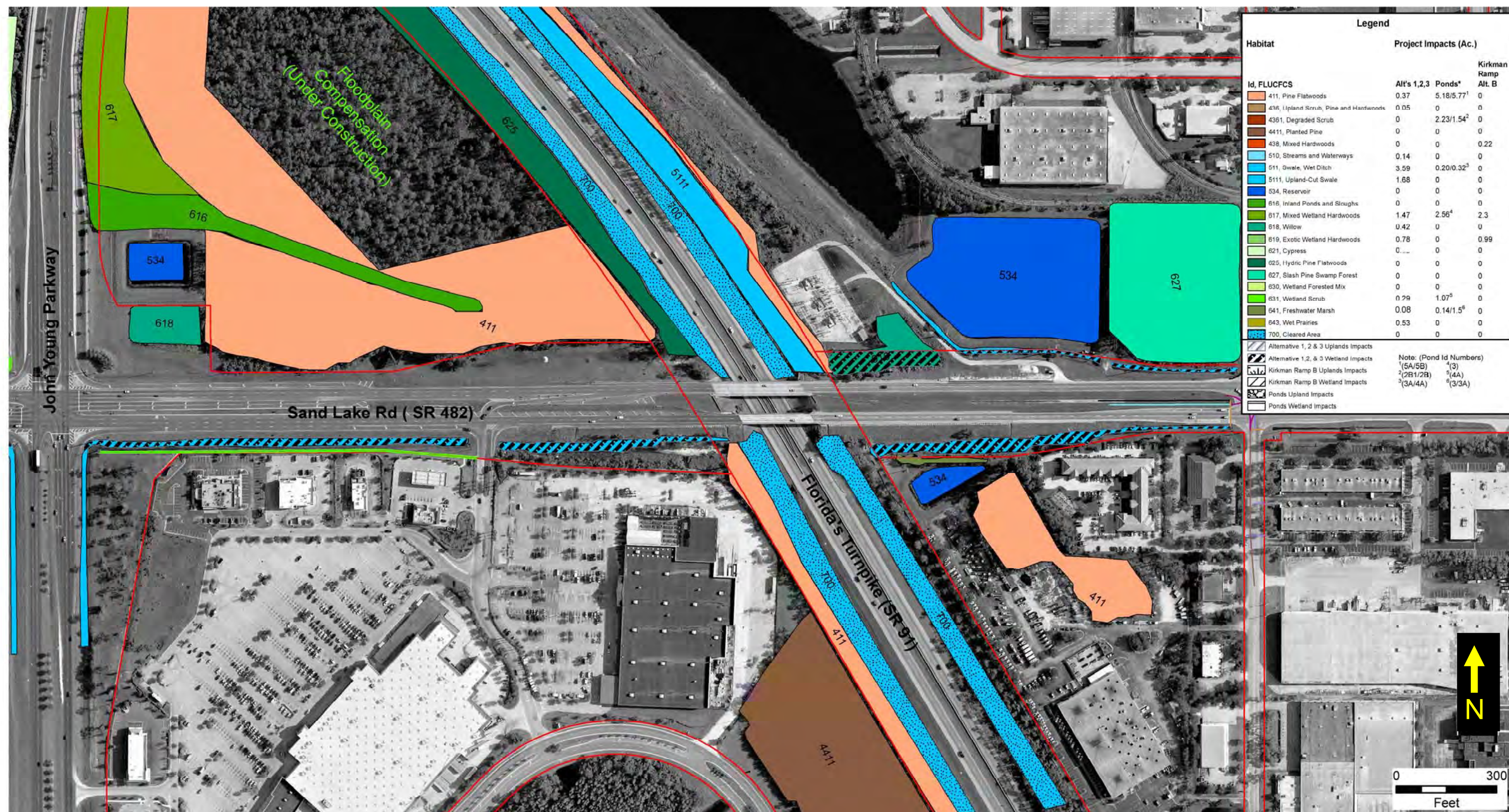














practical. Eleven of the 15 wetland wetland/surface water classifications are impacted. A majority of the impacts occur within roadside swales or other manmade features.

Alternatives to avoid/minimize impact to wetlands have been considered. Avoidance is not possible.

Mitigation for approximate impacts to 12.13 acres of wetlands for Sand Lake Road is anticipated. Although mitigation is not anticipated for impacts to 'other' surface waters as these areas are part of an existing drainage system, the USACE may claim jurisdiction thus requiring an additional 4.25 acres of mitigation (upland-cut ditches are excluded). Thus, as a worst case mitigation 16.38 acres may be required.

**TABLE 4-1. SUMMARY OF WETLAND IMPACTS**

FLUCFCS Code	Description	Impact Acreage (Roadway)	Impact Acreage (Proposed Pond* Locations)	Impact Acreage (Kirkman Ramp)
617	Mixed Wetlands Hardwoods	1.47	2.56 <sup>1</sup>	2.3
618	Willow and Elderberry	0.42	0	0
619	Exotic Wetland Hardwoods	0.78	0	0.99
631	Wetland Scrub	0.29	1.07 <sup>2</sup>	0
641	Freshwater Marsh	0.08	0.14/1.5 <sup>3</sup>	0
643	Wet Prairie	0.53	0	0
	<b>TOTAL IMPACTS</b>	<b>3.57</b>	<b>5.27</b>	<b>3.29</b>

\*Pond Numbers: <sup>1</sup>(3), <sup>2</sup>(4A), <sup>3</sup>(3A/3)

**TABLE 4-2. SUMMARY OF OTHER SURFACE WATER IMPACTS**

FLUCFCS Code	Description	Impact Acreage (Roadway)	Impact Acreage (Proposed Pond* Locations)	Impact Acreage (Kirkman Ramp)
510	Streams and Waterways	0.14	0	0
511	Wet Ditch/Swale	3.59	0.20/0.32 <sup>1</sup>	0
5111	Upland-Cut Swale	1.68	0	0
522	Lakes	0	0	0
534	Reservoir	0	0	0
	<b>TOTAL IMPACTS</b>	<b>5.41</b>	<b>0.52<sup>1</sup></b>	<b>0</b>

\*Pond Numbers: <sup>1</sup>(3A/4A)

Wetland impacts are proposed to be mitigated pursuant to Section 373.4137 Florida Statutes (F.S.). The cost per mitigation acre for the Funding Year 2006/2007 is \$92,444. According to this cost rate, mitigation for impacts to wetlands along Sand Lake Road will be \$1,121,346 Mitigation for impacts to other surface waters is \$392,887. The total (maximum) cost for mitigation is \$1,514,233.

Mitigation will be provided for any unavoidable wetland impacts. Wetland impacts will be mitigated pursuant §373.4137, (F.S. Senate Bill 1986) to satisfy all mitigation requirements of Part IV, Chapter 375, F.S. and 33 U.S.C.S. 1344.

A Wetland Evaluation Report has been prepared and is on file at the FDOT District 5 office. A copy is provided on CD at the end of this report.

#### 4.3.3.2 Water Quality

A Water Quality Impact Evaluation (WQIE) was conducted for the project in order to comply with the Clean Water Act (surface water impacts) and the Safe Drinking Water Act (ground water impacts). A WQIE checklist is included in *Appendix K*.

#### 4.3.3.3 Flood plains

The Federal Emergency Management Agency (FEMA) maps for Orange County, Florida, were used to identify potential flooding and floodway encroachments associated with this project. According to the FEMA maps, the project is primarily located within Zone 'X'. Zone 'X' designates areas outside the 500-year flood plain. However, some segments are within Zones 'A' and 'AE'. Zone 'A' designates areas subject to flooding; however, no 100-year or base flood elevations have been determined as part of the Flood Insurance Study. Zone 'AE' designates areas subject to flooding where a 100-year or base flood elevation has been determined by the Flood Insurance Study and is indicated on the FIRM panels. Zone 'AH' designates areas subject to flooding where a 100-year or base flood elevation has been determined but is determined in terms of a flood depth of one to three feet, usually areas of ponding, by the Flood Insurance Study and indicated on the FIRM panels. These areas are affected by 100-year flood events and are discussed below.

Four areas within the project limits are within the 100-year flood limits. The first area is the westernmost end of the project. Currently, a cross drain exists under Sand Lake Road connecting Spring Lake, north of Sand Lake Road, and Little Sand Lake located south of Sand Lake Road. Both Spring Lake and Little Sand Lake along with the area surrounding the Sand Lake Road cross drain are in the floodplain designation 'AE' with an elevation of 102.00 NGVD. The second area is within the SR 435 (Kirkman Road) and Sand Lake Road interchange. This floodplain area is designated Zone 'A'. The third area is in the vicinity of Shingle Creek. This area is designated Zone 'AE' with an elevation of 89.00 NGVD immediately north of Sand Lake Road. The floodplain includes Sand Lake Road from west of Kingspointe Parkway to halfway between John Young Parkway and Florida Turnpike's. The area immediately around Shingle Creek is within a regulated floodway. The fourth area is a small flood prone area north of Sand Lake Road east of Florida's Turnpike and west of Presidents Drive. The fourth area is designated 'AH' and has a flood plain elevation of 92.0 NGVD according to the Flood Insurance Study.

The floodplain impacts associated with the proposed roadway improvements will be minimal. The floodplain impacts are located in the Kirkman Road interchange infield areas and surrounding the Shingle Creek regulated floodway. The Kirkman Road interchange improvements propose stormwater ponds within the infield areas to mitigate any floodplain impacts while providing stormwater management. The Shingle Creek regulated floodway will be minimally impacted by a reduction in piles by the new bridge replacing the existing Shingle Creek Bridge, and an insignificant impact by the proposed Shingle Creek Trail proposed under the new Shingle Creek Bridge. Further, the low member elevation will be raised from the existing 88.5 feet to 92 feet. Additionally, the on-going Turnpike construction project has permitted a floodplain compensation pond on FDOT property with an excess volume available and earmarked for any Sand Lake Road potential floodplain impacts. The permitted floodplain compensation pond on FDOT property will be expanded as needed to provide any additional floodplain compensation. Therefore, the minimal floodplain impacts and mitigation in floodplain compensation ponds result in an insignificant impact to the floodplain and regulated floodway.

#### 4.3.3.4 Coastal Zone Consistency

The Florida Department of Environmental Protection has determined that this project is consistent with the Coastal Zone Management Plan (FDEP letter dated September 13, 2005 and February 21, 2006).

#### 4.3.3.5 Wildlife and Habitat

Wildlife habitats occurring along the project corridor include both wetland and upland communities. Many of these areas have been impacted by exotic vegetation and overgrowth. The Wetland communities were discussed above in Section 4.3.3.1. The majority of the upland habitats found within the study area consist of remnant pine flatwoods areas. A list of the dominant upland vegetative communities within the project limits includes Pine Flatwoods (FLUCFCS 411), Upland Scrub, Pine and Hardwoods

(FLUCFCS 436), Disturbed Upland Scrub, Pine and Hardwoods (FLUCFCS 4361), Mixed Hardwoods (FLUCFCS 438), and Planted Pine (FLUCFCS 4411).

Pursuant to Segment 7(c) of the Endangered Species Act of 1973, the project corridor was evaluated for the potential occurrence of threatened and endangered species. Based on a review of literature, coordination with environmental agencies, and subsequent field reconnaissance, it was determined that state and federally listed (endangered, threatened, and species of special concern) species may potentially occur within the project corridor. The Endangered Species Biological Assessment is provided on CD. Listed species that may occur within the project area are identified in *Table 4-3*. No federally designated critical habitat exists within the project area. Thus, no critical habitat will be impacted. No Essential Fish Habitat (EFH) will be impacted by the proposed project. Maps showing impacts to habitats are shown in *Figures 4-1 through 4-5*.

**TABLE 4-3. FEDERAL AND STATE LISTED SPECIES POTENTIALLY PRESENT WITHIN PROJECT AREA**

Category	Common Name	Scientific Name	Federal Status	State Status	Occurrence Potential
<b>Mammals</b>	Florida Mouse	<i>Peromyscus floridanus</i>	N	SSC	Moderate
	Sherman's Fox Squirrel	<i>Sciurus niger shermani</i>	N	SSC	Moderate
<b>Birds</b>	Florida Scrub Jay	<i>Aphelocoma coerulescens</i>	T	T	Low
	Bald Eagle	<i>Haliaeetus leucocephalus</i>	T	T	Low
	Wood Stork	<i>Mycteria americana</i>	E	E	High
	Red-cockaded Woodpecker	<i>Picoides borealis</i>	E	SSC	Low
	Limpkin	<i>Aramus guarauna</i>	N	SSC	Moderate
	Snowy Egret	<i>Egretta thula</i>	N	SSC	Moderate
	Little Blue Heron	<i>Egretta caerulea</i>	N	SSC	Moderate
	Tricolored Heron	<i>Egretta tricolor</i>	N	SSC	High
	White Ibis	<i>Eudocimus albus</i>	N	SSC	Moderate
	Southeastern American Kestrel	<i>Falco sparverius paulus</i>	N	T	Moderate
	Florida Sandhill Crane	<i>Grus canadensis pratensis</i>	N	T	Moderate
	American Alligator	<i>Alligator mississippiensis</i>	T (S/A)	SSC	High
<b>Reptiles</b>	Eastern Indigo Snake	<i>Drymarchon corais couperi</i>	T	T	Moderate
	Sand Skink	<i>Neoseps reynoldsi</i>	T	T	Low
	Gopher Tortoise	<i>Gopherus polyphemus</i>	N	SSC	Low
	Florida Pine Snake	<i>Pituophis melanoleucas mugitus</i>	N	SSC	Low
	Short-tailed Snake	<i>Stilostoma extenuatum</i>	N	T	Low
<b>Amphibians</b>	Florida Gopher Frog	<i>Rana capito</i>	N	SSC	Low

Source: USFWS, FFWCC

SSC = Species of special concern; T = Threatened; E = Endangered; N = Not Listed

T (S/A) = Threatened due to Similarity of Occurrence

Strategic Habitat Conservation Areas (SHCA) are present within the project area. Review of the FWC database reveals that SHCA are located outside the limits of this project. No impacts to these areas are anticipated due to project implementation.



Priority Wetlands Habitat has also been identified by Florida Fish and Wildlife Conservation Commission (FWC) as being present within the project area. These areas are associated with the wetland forests of Shingle Creek. With the exception of replacing the existing bridges on Sand Lake Road with new bridges over Shingle Creek along the same alignment and the potential minor widening of the bridges over Florida's Turnpike, no impacts to these areas are anticipated due to project implementation.

Minor impacts to the natural communities present along the project corridor are anticipated. These impacts will occur along the fringes of the habitat due to the widening of the roadway. No impact to existing mitigation areas (mitigation in Shingle Creek for Universal Studios) is anticipated with implementation of the recommended alternative. Permanent habitat impacts are presented in *Table 4-4*.

Provided below is a brief description of each listed species that may occur within the project area. An \* indicates that the species is federally listed.

#### Florida Mouse (*Peromyscus floridanus*)

The Florida mouse is state-listed as a species of special concern. This species can be found in xeric upland communities with sandy soils, including scrub, sandhill, and ruderal sites where they can inhabit burrows of the gopher tortoise (*Gopherus polyphemus*). Marginal habitat is present for this species and no impact to potential habitat will occur. As such, this species will not be affected by habitat loss due to project activities.

#### Sherman's Fox Squirrel (*Sciurus niger shermani*)

Sherman's fox squirrel is state-listed as a species of special concern. This large tree squirrel inhabits pine flatwoods, pastures and other open, ruderal habitats with scattered oaks and pines. No specimens of Sherman's fox squirrel were observed during the field reviews and no recorded

**TABLE 4-4. SUMMARY OF HABITAT IMPACTS (ACRES)**

<b>FLUCFCS Code</b>	<b>Description</b>	<b>Roadway</b>	<b>Ponds*</b>
411	Pine Flatwoods	0.37	5.18/5.77 <sup>1</sup>
436	Upland Scrub, Pine and Flatwoods	0.05	0
4361	Degraded Scrub	0	0.20/2.23/1.54 <sup>2</sup>
438	Mixed Hardwoods	0	0
4411	Planted Pine	0	0
510	Streams and Waterways	0.14	0
511	Wet Ditch/Swale	3.59	0.52 <sup>3</sup>
5111	Upland-Cut Swale	1.68	0
522	Lakes	0	0
534	Reservoir	0	0
616	Inland Ponds and Sloughs	0	0
617	Mixed Wetlands Hardwoods	1.47	2.56 <sup>4</sup>
618	Willow and Elderberry	0.42	0
619	Exotic Wetland Hardwoods	0.78	0
621	Cypress Wetland	0	0
625	Hydric Pine	0	0
627	Slash Pine Swamp Forest	0	0
630	Wetland Forested Mix	0	0
631	Wetland Scrub	0.29	1.07 <sup>5</sup>
641	Freshwater Marsh	0.08	1.64 <sup>6</sup>
643	Wet Prairie	0.53	0
	<b>TOTAL</b>	<b>9.40</b>	<b>12.52-13.80</b>

\*Pond Numbers: <sup>1</sup>(5A/5B), <sup>2</sup>(2A/2B1/2B), <sup>3</sup>(3A+4A), <sup>4</sup>(3B), <sup>5</sup>(4A), <sup>6</sup>(3A+3B)

*Note: Pond 2A has been expanded to include 0.20ac impact to FLUCFCS 4361. The pond expansion is not shown on Fig 4-1 but included in the impact calculation.*

observances of this species were found. However, appropriate habitat for this species exists within the project area; and impact to pine flatwood habitats will occur due to construction of ponds. The ponds have typically been located in forested areas that have already been disturbed or in forested areas adjacent to existing construction (floodplain compensation pond located along the Turnpike, immediately north of Sand Lake Road). In addition, the proposed project will not impact the largest remaining pine flatwood area

located within the project area. Therefore, it is anticipated that no adverse affect to this species will occur.

Florida Scrub Jay (*Aphelocoma coerulescens*)\*

The Florida scrub jay is both state and federally listed as a threatened species. It inhabits fire-dominated, low-growing, oak scrub habitat found on well-drained sandy soils, and may persist in areas with sparser oaks or scrub areas that are overgrown, but at much lower densities and with reduced survivorship. Scrub jays have been historically found near the project area (FFWCC Breeding Bird Atlas). The USFWS indicated an occurrence of a single scrub jay specimen approximately 0.5 miles north of the projects. No occurrences have been recorded within the project area. Marginal habitat for the scrub jay is present within the project area including a remnant scrub area along the south side of Sand Lake Road and just east of the Kirkman Road Interchange. A second remnant scrub area was also identified on the southside of the roadway just west of the Kirkman Road Interchange. No scrub jays have been recorded in the area and the potential for occurrence was very low. However, a preliminary scrub jay survey of the two scrub habitats was conducted and no scrub jays observed. Coordination with FFWCC, USFWS and Orange County Environmental Protection Division occurred on the potential presence of scrub jays in the project corridor. No scrub jays have been recorded in the area and the potential for occurrence was very low. Due to the results of the preliminary surveys as well as the lack of any recorded occurrences within the project area, no affect to the scrub jay is anticipated due to project implementation.

Bald Eagle (*Haliaeetus leucocephalus*)\*

The bald eagle is both state and federally listed as a threatened species. It is found throughout the State of Florida and most commonly inhabits coastal areas, bays, rivers, lakes, or other bodies of water that provide concentrations of food sources. There have been visual occurrences of bald eagles in the project area (fly-overs). However, the project is located in an area surrounded by urban development and suitable nesting and foraging habitat for this species is extremely limited. A review of bald eagle occurrences and nesting locations within and around the project area was conducted with the FFWCC

as well as a thorough literature review. Based on the latest available data from FFWCC on bald eagle nests, the closest nest is approximately three and a half (3.5) miles northeast of the projects, on Lake Conway. Therefore, no affect to this species will occur due to project activities.

Wood Stork (*Mycteria americana*)\*

The wood stork is both a state and federally listed endangered species. Wood storks inhabit freshwater and brackish wetlands, primarily nesting in cypress and mangrove swamps. They can be found foraging in shallow water in freshwater marshes, narrow tidal creeks and flooded tidal pools as well as roadside ditches and pasture lands. According to the FFWCC database, one wood stork colony lies within 18.6 miles of the project area (Core Foraging Area (CFA) for the species). The FNAI database also reports that portions of the project area are located on or near potential habitat for the wood stork. In addition, field reviews confirmed that potential foraging habitat is present within the project corridor. Multiple wood storks were observed foraging in the wet prairie habitat adjacent to the Turnpike. The proposed project will not adversely affect the wood stork due to minimal impacts to foraging habitat and required wetland mitigation will occur within the CFA.

Red-Cockaded Woodpecker (*Picoides borealis*)\*

This species is federally listed as endangered, and state-listed as a species of special concern. It inhabits open, mature pine woodlands that have a diversity of grass, forb, and shrub species. The Orange County EPD and the USFWS had no records of RCW in the project area and found it to be an “unlikely” nesting and foraging area for the species which prefers old-growth pine species, particularly longleaf pine (Liz Johnson, Environmental Supervisor Orange County EPD, 2006 and FFWCC, Management Plan for Red-Cockaded Woodpecker, 2003). FFWCC did have records of the RCW in several Orange County locations, but no historical or current records show the RCW within the project area. The closest known RCW occurrences are 5-6 miles southwest and 10-11 miles east of the project section (Robin Boughton, Avian Coordinator, FFWCC, 2006). Based on field reviews, no old growth forest is present within the project area. In

addition, field surveys did not find any occurrences of red-cockaded woodpeckers and there are no documented occurrences of this species. Therefore, no affect to this species is anticipated with project activities.

Limpkin (*Aramus guarauna*)

Limpkins are state-listed as a species of special concern. They inhabit fresh and salt water wetland habitats, as well marginal areas around natural and man-made ponds, lakes, rivers, swales and sloughs in south Florida. They have a wide range of nesting sites, including mounds of aquatic vegetation and marsh grasses, among cypress knees, and high in trees. According to the FNAI database, limpkins have been historically found near the project area, and appropriate habitat for the limpkin exists within the project corridor. The drainage pond areas, wet swales, and drainage ditches in or adjacent to the project study area may provide foraging habitat for this species. The project will not significantly reduce available habitat for these species, therefore, the limpkin will not be adversely affected by project activities.

Snowy Egret (*Egretta thula*), Little Blue Heron (*Egretta caerulea*), Tri-colored Heron (*Egretta tricolor*), White Ibis (*Eudocimus albus*)

None of these wading birds is federally listed; however, each is listed by the state as a species of special concern. These wading birds are found throughout the state in saltmarshes, mangroves, wet prairies and freshwater marshes. Although the drainage pond areas, wet swales, and drainage ditches in or adjacent to the project study area may provide foraging habitat for all four of these species; the project will not significantly reduce available habitat for these species. Therefore, these species will not be adversely affected by project activities.

Southeastern American Kestrel (*Falco sparverius paulus*)

Southeastern American kestrels are State listed as threatened (excludes northern migrants). Kestrels can be found in open pine habitats, woodland edges, prairies, and pastures throughout much of Florida. Sandhill habitats seem to be preferred, but this species may also occur in flatwoods settings. This species has been reported in southern

Orange County and suitable habitat for this species is present in the project vicinity; however, it is limited. No impact to potential foraging habitat will occur. Therefore, no impact to this species is anticipated.

Florida Sandhill Crane (*Grus canadensis pratensis*)

This species is considered threatened by the State of Florida. It inhabits prairies, freshwater marshes, and pasture lands. This species has been reported near the project area, and the FNAI database has identified portions of the project area as located on or near potential habitat for the sandhill crane. Although the drainage pond areas, wet swales, and drainage ditches in or adjacent to the project study area may provide foraging habitat for this species, the project will not significantly reduce available habitat for this species. Therefore, this species will not be adversely affected by project activities.

American Alligator (*Alligator mississippiensis*)\*

The American alligator is state-listed as species of special concern. They are federally listed as threatened due to similarity of appearance where their habitat overlaps that of the American crocodile, (*Crocodylus acutus*). The alligator typically inhabits freshwater marshes and lakes, while the crocodile prefers saltwater habitats. The proposed project area contains freshwater habitat, and a single American alligator was observed within the project area during the field reviews. Sufficient habitat for the alligator will remain. As such, this species will not be adversely affected by project activities.

Eastern Indigo Snake (*Drymarchon corais couperi*)\*

The eastern indigo snake is listed as threatened by both the USFWS and the FFWCC. These snakes need relatively large areas of undeveloped land, as roads continue to fragment habitats, eastern indigo snakes will be increasingly vulnerable to highway mortality as they travel through their large territories. The preferred Florida habitat includes dry glade areas, tropical hammocks, muckland fields, and some flatwoods areas. It will also utilize disturbed areas as well as urban habitats. Roadside berms and swales may be potential habitat. It is a common commensal of gopher tortoise burrows.

No eastern indigo snakes were observed within the project corridor. However, potential habitat does exist within the project area. The Standard Protection Measures for the eastern indigo snake will be incorporated during the design and construction phases. Therefore, no adverse affect to this species is anticipated, if these measures are implemented.

Sand Skink (*Neoseps reynoldsi*)\*

The sand skink is both state and federally listed as threatened. Its range is limited to the central counties of the state, and it principally inhabits rosemary scrub, but also sand pine and oak scrubs, scrubby flatwoods, turkey oak ridges within scrub, and even along edges of citrus groves occupying former scrub. The skink requires loose sand (for burrowing) with large patches of sparse to no groundcover or canopy. A limited area of habitat for this species, overgrown scrub, occurs within the project area due to overgrowth of the scrub habitat. Although they are difficult to observe, none were documented during field surveys. The proposed road and pond improvements will not impact potential habitat; therefore, this species will not be adversely affected by project activities.

Gopher Tortoise (*Gopherus polyphemus*)

The gopher tortoise is a state-listed species of special concern. Vegetation communities where gopher tortoises are found include longleaf pine sandhills, xeric oak hammocks, scrub, pine flatwoods, dry prairies, and coastal dunes. Gopher tortoises can also live in man-made environments, such as pastures, old fields, railroad beds, and grassy roadsides. Habitat for the gopher tortoise within the project area is marginal due to significant overgrowth of the scrub areas. The proposed road and pond improvements will not impact potential gopher tortoise habitat. Therefore, this species will not be adversely affected by project activities.

Florida Pine Snake (*Pituophis melanoleucas mugitus*)

The Florida pine snake is state-listed as a species of special concern and occurs throughout the majority of the state. It inhabits relatively open canopies and dry sandy

soils, in which it burrows. It prefers sandhill and former sandhill communities, including old fields and pastures, but also sand pine scrub and scrubby flatwoods. It often coexists with pocket gophers and gopher tortoises. Habitat for this species is present within the project area. However, the proposed road and pond improvements will not impact potential habitat; therefore, this species will not be affected by project activities.

#### Short-tailed Snake (*Stilosoma extenuatum*)

This species is state-listed as threatened. It inhabits dry upland habitats, primarily sandhill, xeric hammock and sand pine-scrub communities. The proposed road and pond improvements will not impact potential short-tailed snake habitat. Therefore, this species will not be adversely affected by project activities.

#### Gopher Frog (*Rana capito*)

The gopher frog is a state-listed species of special concern. It lives in dry, sandy uplands, chiefly sandhill and scrub habitat that include isolated wetlands or large ponds within about one mile. The gopher frog is nocturnal, and is often a commensal of gopher tortoise burrows. No gopher frogs were observed during the field reviews of the project area, although marginal habitat for the species is present in the project area. The proposed road and pond improvements will not impact potential habitat; therefore, this species will not be affected by project activities.

#### Bats

At least five species of bats use highway bridges in Florida as roosting sites including free-tailed bats (*Tadarida brasiliensis*), southeastern myotis (*Myotis austroriparius*), big brown bats (*Eptesicus fuscus*), evening bats (*Nycticeius humeralis*), and Rafinesque's big-eared bat (*Corynorhinus rafinesquii*). None of the bat species are listed as endangered, threatened or of special concern, giving them no federal regulatory protection in Florida. There are, however, FWC rules concerning bat roosts in bridges as listed in Chapter 68A-4.001: Section 1 of the Florida Administrative Code (FAC) which states that no roosts shall be disturbed, and Section 2 of the FAC states that the use of toxic chemicals to destroy bats or drive them from their nesting sites is prohibited.



Bats have been reported at the five bridges associated with the Kirkman Road interchange (Bridge Nos. 750043, 750044, 750143, 750144 and 750045). None of these bridges are slated for replacement, however widening of several of these structures is recommended. There have been no reported occurrences of bats at the two Shingle Creek bridges (Bridge No. 750283 and 750292). These bridges are slated for replacement. The other bridges in the project include:

- Sand Lake Road EB over the Turnpike (700294) – currently being widened
- Sand Lake Road EB over the Turnpike (750568) – replacement bridge under construction
- Sand Lake Road over the Turnpike (750294)
- John Young Pkwy NB over Turnpike (754098)
- John Young Pkwy SB over Turnpike (754097)

The first two bridges are under construction. There have been no reported occurrences of bats at the last three bridges. These bridges are not slated for replacement. However, prior to construction activities, it is recommended that a preconstruction survey be conducted to determine the presence of bats at each of the bridges. Due to the need to widen the existing bridges at the Kirkman Road Interchange, it may be necessary to exclude the bats from their roosts. Exclusions should be avoided during the maternity season (April 15 – August 15) due to the need for adults to return to their roosts to feed the flightless young. Based on adherences to these recommendations, no impact to any species of bats is anticipated.

#### 4.3.3.6 Rare Plant Habitat

The FNAI database also listed the project area as having potential habitat for rare plants, including Florida bonamia (*Bonamia grandiflora*, federal-T, state-E), which was identified as having potential habitat within the project area. No Florida bonamia were observed during field surveys, although an occurrence has been documented northeast of the project area. Other listed plant species documented near the project area include

nodding pinweed (*Lechea cernua*, state-T) and paper-like nailwort (*Paronychia chartacea* ssp. *Chartacea*, federal-T, state-E). None of these species were observed in the project area.

#### 4.3.3.7 Biological Impact Summary

The results of the Endangered Species Biological Assessment indicate that adverse impacts to protected species are not anticipated as a result of the proposed project. Seven federally listed species were evaluated to determine if the proposed project will affect these species.

Federally listed species which may potentially be impacted by the proposed project include the wood stork and eastern indigo snake. Minor impacts to wood stork foraging habitat may occur as a result of filling in portions of the drainage ditches and swales. However, because these impacts are relatively minor and any required wetland mitigation will occur within the CFA, the wood stork will not be adversely affected by project implementation. The eastern indigo snake was not directly observed during field surveys. However, suitable habitat for this species exists within the study area. In order to avoid adverse impacts during construction activities, protective guidelines will be implemented. These guidelines have been highly effective on previous roadway projects and will assure that the project will not adversely affect this species. Minor impact to alligator habitat may occur, however sufficient habitat will remain within the conservation areas of the Shingle Creek basin. Therefore no adverse effect to this species will occur.

No affect to the Florida scrub jay, bald eagle, red-cockaded woodpecker or sand skink is anticipated due to the lack of available habitat for these species within the project limits, lack of any indications of their presence during the field surveys, and/or specific information which document their absence from the project area.

Eleven additional state listed species were evaluated to determine if the proposed project will affect these species. The pine flatwoods and upland scrub areas provide marginal habitat for the gopher tortoise and any commensal species (such as the gopher frog and

Florida mouse). Impacts to gopher tortoise habitat are not anticipated. Therefore, no impact to gopher tortoises or any commensal species is anticipated. Six state listed avian species, including the little blue heron, snowy egret, tricolored heron, limpkin, sandhill crane, and the white ibis, may be affected due to the direct impact of fill in drainage ditches and swales. However, it is anticipated that this project is not likely to adversely affect these species since the majority of habitat within the project area will remain. It is not anticipated that this project will impact another state listed avian species, the Southeastern American kestrel, due to lack of foraging habitat and potential breeding sites along the project corridor.

The construction contractor, in accordance with the Florida Department of Transportation's Standard Specifications for Road and Bridge Construction 2007, will comply with "Article 7-1.4 Compliance with the Federal Endangered Species Act". In so doing, the contractor will notify the FDOT Environmental Management Office of any off-site related activities in relation to the proposed project, including, but not limited to staging areas, borrow pits, loading areas and any other off-site activity that has not received prior biological clearance. Any chance encounters with state or federally listed species will be handled according to the protocol set forth, and enforced, by FFWCC and/or USFWS.

In conclusion, impact to habitats that support listed wildlife species will be minimized to the greatest extent possible. Because only portions of these habitats will be impacted by the project, suitable habitat will remain following construction particularly associated with the conservation lands of the Shingle Creek basin, and mitigation will be provided as required. No long-term impacts to regional populations of any listed species are expected to occur based on the proposed project.

An Endangered Species Biological Assessment has been prepared and is on file at the FDOT District 5 office. A copy is provided on CD at the end of this report. The USFWS concurrence correspondence can be found in *Appendix L*.

#### 4.3.4 Physical Impacts

##### 4.3.4.1 Noise

A desk top review was conducted to determine if noise sensitive sites were present within the project area. No noise sensitive sites were located in close proximity of Sand Lake Road or the new Turnpike Interchange. Therefore, due to the absence of noise sensitive receivers within the study limits, it is expected that traffic noise associated with this project study would produce no impacts.

##### 4.3.4.2 Air

An Air Quality Screening Analysis was undertaken for this project. The results of the air screening analysis are presented in *Table 4-5*. In all cases, the project is not expected to exceed the NAAQS maximum CO levels of 35 ppm for the One-Hour and 9 ppm for the Eight-Hour. Thus, the project passes the CO screening analysis, and significant air quality impacts due to the proposed project are not expected.

**TABLE 4-5. CO FL 2004 RESULTS DATA SUMMARY**

YEAR	DESIGN HOUR TRAFFIC VOLUME WORST-CASE LINK	SPEED (MPH)	PREDICTED CO CONCENTRATION		NAAQS MAX. CO CONCENTRATION	
			1-HR ppm	8-HR ppm	1-HR ppm	8-HR ppm
<b>2005 Existing</b>	2580	55	10.9	6.6	35	9
<b>2010 Build</b>	2840	55	9.3	5.6	35	9
<b>2020 Mid-Design</b>	3230	55	8.2	4.9	35	9
<b>2030 Design</b>	3680	55	8.5	5.1	35	9

#### 4.3.4.3 Construction

Construction activities for the proposed project will have air, noise, water quality, visual and minor traffic flow impacts for those residents and travelers within the immediate vicinity of the project.

Construction activities will cause minor short-term air quality impacts in the form of dust from earthwork and unpaved roads, and diesel-powered construction equipment. Air pollution associated with the creation of airborne particulates will be effectively controlled through the use of watering or the application of other controlled materials in accordance with FDOT's *Standard Specifications for Road and Bridge Construction* as directed by the FDOT Project Engineer.

Noise and vibrations impacts will be from heavy equipment movement and construction activities such as vibratory compaction of roadway and embankments. Noise control measures will include those contained in FDOT's *Standard Specifications for Road and Bridge Construction* in addition to those recommended in the Noise Impact section of this document. Adherence to local construction noise and/or construction vibration ordinances by the contractor will also be required where applicable.

Water quality impacts resulting from erosion and sedimentation will be controlled in accordance with FDOT's *Standard Specifications for Road and Bridge Construction* and through the use of Best Management Practices.

Maintenance of traffic and sequence of construction will be planned and scheduled so as to minimize traffic delays throughout the project. Signs will be used as appropriate to provide notice of road closures and other pertinent information to the traveling public. The local news media will be notified in advance of road closings and other construction-related activities which could excessively inconvenience the community so that motorists, residents, and business persons can plan travel routes in advance.

A sign providing the name, address, and telephone of the Department contact person will be displayed onsite to assist the public in obtaining immediate answers to questions and logging complaints about project activity.

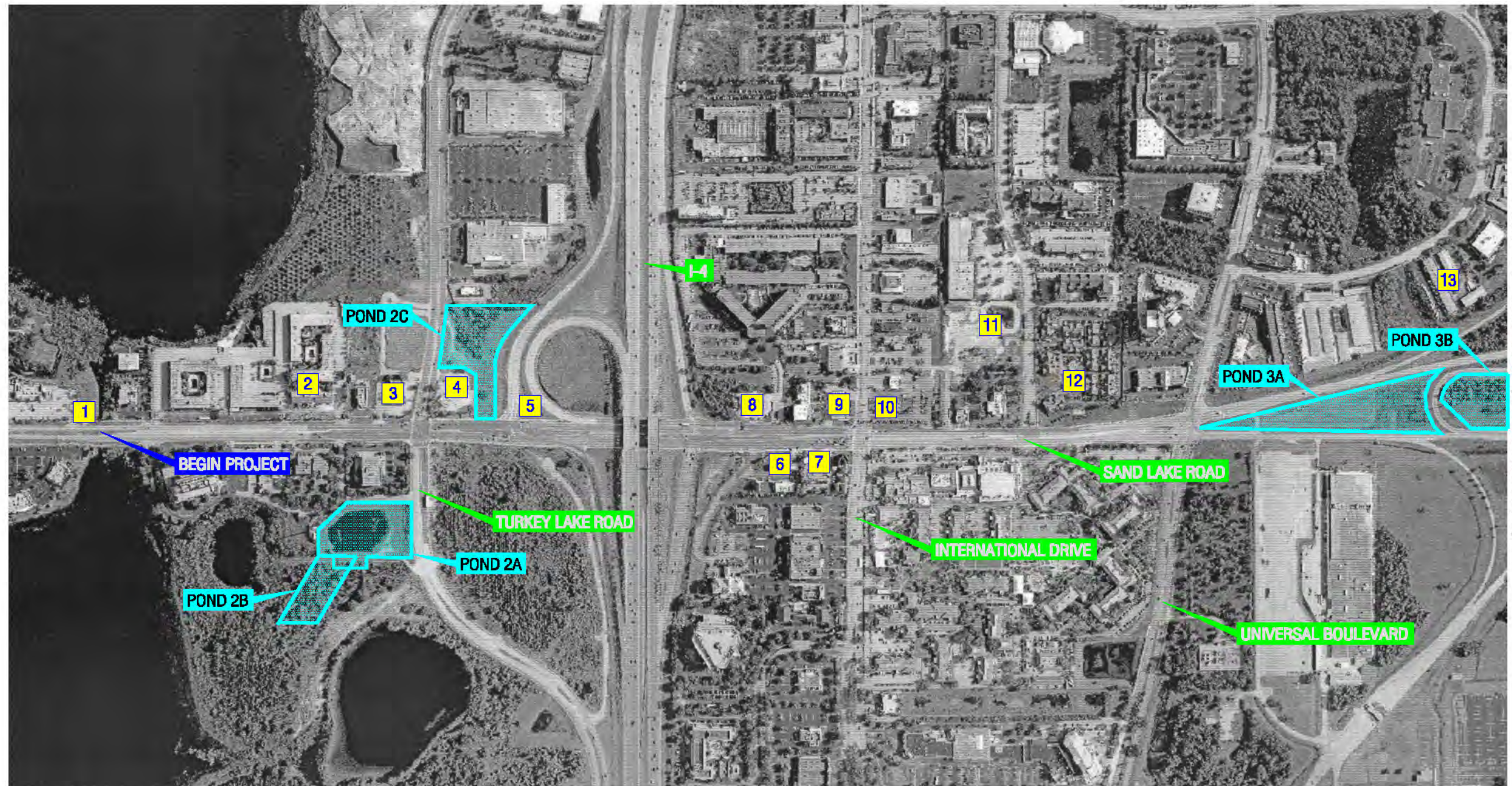
Access to all businesses and residences will be maintained to the extent practical through controlled construction scheduling. Traffic delays may occur, and will be controlled to the extent possible where many construction operations are in progress at the same time. The contractor will be required to comply with the Best Management Practices of FDOT. For the residents living within the project area, some of the materials stored for the project may be displeasing visually; however, this is a temporary condition and should pose no substantial problem in the short term.

Construction of the roadway requires excavation of unsuitable material (muck), placement of roadway fill, and use of materials, such as limerock, asphaltic concrete, and portland cement concrete. Demucking is anticipated at most of the wetland sites and will be controlled by *Section 120 of the FDOT Standard Specifications*. Disposal will be on-site in detention areas or off-site. The contractor is responsible for his methods of controlling materials from the project. Temporary erosion control features as specified in the FDOT's Standard Specifications, Section 104, will consist of temporary grassing, sodding, mulching, sandbagging, slope drains, sediment basins, sediment checks, artificial coverings, and berms.

#### 4.3.4.4 Contamination

A Contamination Screening Evaluation Report (CSER) was conducted to evaluate the risk of encountering petroleum or hazardous substance contamination of soil or groundwater in the vicinity of the proposed alignment that could affect right-of-way acquisition or roadway construction. *Figures 4-6, 4-7 and 4-8* display the potential contamination sites and their corresponding ratings along the project corridor. The CSER is also included on CD.





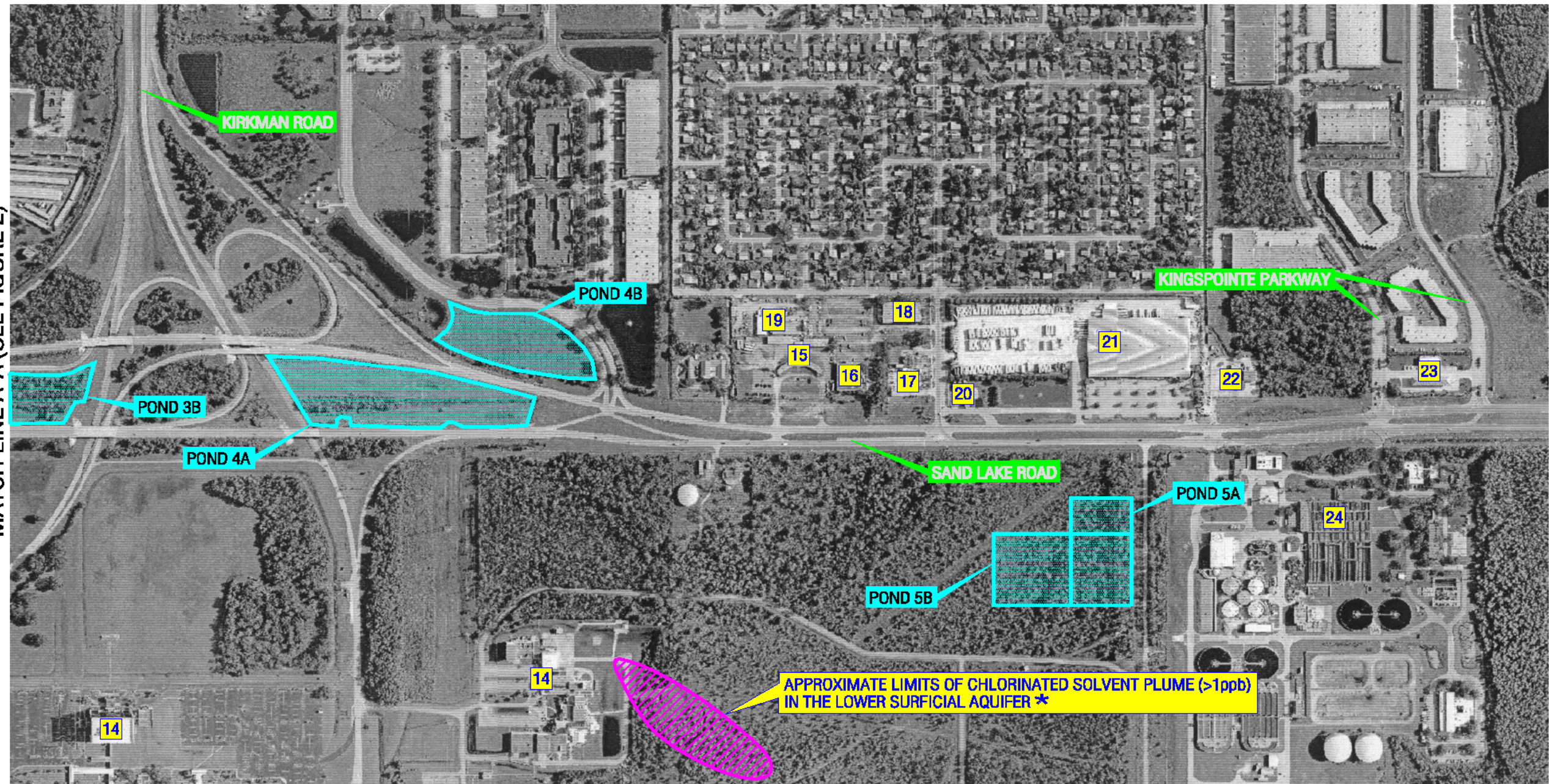
PREPARED FROM AN AERIAL PHOTOGRAPH PROVIDED BY:  
KIMLEY-HORN ASSOCIATES

#### POTENTIAL CONTAMINATION SITES AND RATINGS

- |  |  |  |
|--|--|--|
| <b>1</b> LIFT STATION (LOW)<br>SAND LAKE ROAD              | <b>6</b> BP AMOCO #15304 (HIGH)<br>6942 SAND LAKE ROAD               | <b>11</b> FORMER FUN N WHEELS FAMILY FUNPARK (HIGH)<br>6739 SAND LAKE ROAD   |
| <b>2</b> DAYS INN (HIGH)<br>7335 SAND LAKE ROAD            | <b>7</b> CHECKERS (FORMER CHEVRON) (HIGH)<br>6908 SAND LAKE ROAD     | <b>12</b> ORLANDO TRADE CENTER (MEDIUM)<br>6221 SAND LAKE ROAD   |
| <b>3</b> CHEVRON (HIGH)<br>7331 SAND LAKE ROAD             | <b>8</b> SHELL (FORMER TEXACO) (HIGH)<br>6941 SAND LAKE ROAD         | <b>13</b> MARITEC IND., INC. (LOW) – 5974/5980 LAKEHURST DRIVE<br>MARINE DESIGN & DEVELOPMENT (LOW) – 5974 LAKEHURST DRIVE |
| <b>4</b> 7-ELEVEN (HIGH)<br>7329 SAND LAKE ROAD            | <b>9</b> MOBIL (FORMER EXXON) (LOW)<br>6877 SAND LAKE ROAD           |  |
| <b>5</b> FORMER 7-ELEVEN (MEDIUM)<br>7957 TURKEY LAKE ROAD | <b>10</b> PERKINS (FORMER GAS STATION) (HIGH)<br>6813 SAND LAKE ROAD |  |



MATCH LINE A-A (SEE FIGURE 2)



MATCH LINE B-B (SEE FIGURE 4)

PREPARED FROM AN AERIAL PHOTOGRAPH PROVIDED BY:  
KIMLEY-HORN ASSOCIATES

#### POTENTIAL CONTAMINATION SITES AND RATINGS

**14** LOCKHEED MARTIN (LOW)  
4600/5600 SAND LAKE ROAD

**15** HOLIDAY RV SUPERSTORE (LOW)  
5001 SAND LAKE ROAD

**16** BELL SOUTH TELECOMMUNICATIONS, INC. (LOW)  
4959 SAND LAKE ROAD

**17** B & A AUTO SALES (LOW)  
8008 MANDARIN DRIVE

**18** BELL SOUTH TELECOMMUNICATIONS, INC. (LOW)  
7900 MANDARIN DRIVE

**19** BELL SOUTH TELECOMMUNICATIONS, INC. (LOW)  
5100 STEYR STREET

**20** TEXACO (HIGH)  
4933 SAND LAKE ROAD

**21** GES EXPOSITION (LOW)  
4805 SAND LAKE ROAD

**22** ORANGE COUNTY FIRE STATION NO. 52 (LOW)  
4765 SAND LAKE ROAD

**23** RACETRAC #412 (LOW)  
4751 SAND LAKE ROAD

**24** ORANGE COUNTY WATER RECLAMATION FACILITY (LOW)  
4760 SAND LAKE ROAD

#### NOTES:

\* INFORMATION OBTAINED FROM THE FOLLOWING REPORT

— "SEMI ANNUAL GROUNDWATER MONITORING REPORT — SWMU #49  
DATED NOVEMBER 2003

ppb — PARTS PER BILLION

**SR 482 PD&E Study**  
**Project Development Summary Report**

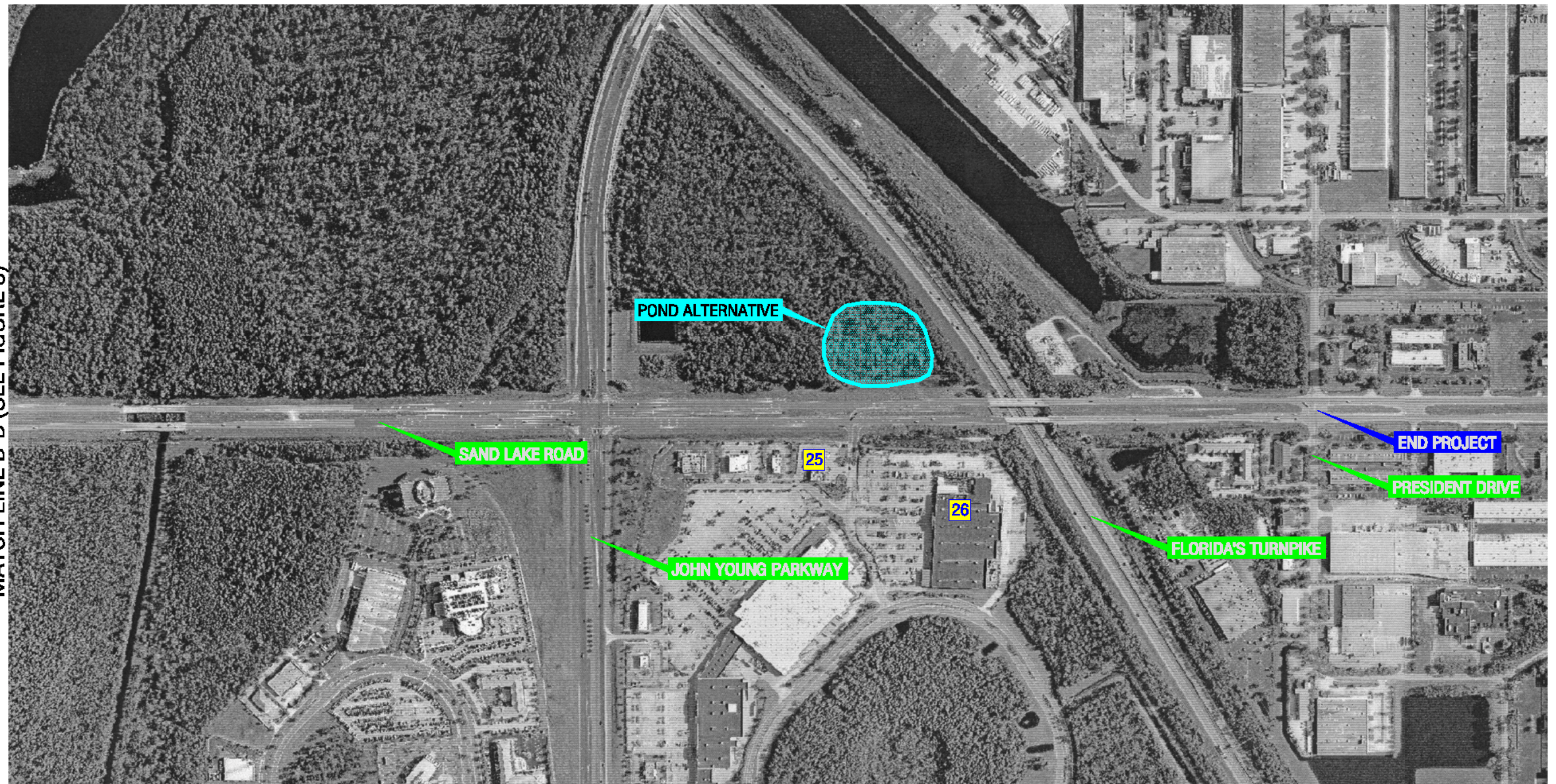
**Financial Project ID: 407143-3-22-01**

**Potential Contamination Sites and  
Ratings**

**Figure  
4-7**



MATCH LINE B-B (SEE FIGURE 3)



PREPARED FROM AN AERIAL PHOTOGRAPH PROVIDED BY:  
KIMLEY-HORN ASSOCIATES

#### POTENTIAL CONTAMINATION SITES AND RATINGS

25 HESS #09342 (LOW)  
2902 SAND LAKE ROAD

26 LOWES (LOW)  
2800 SAND LAKE ROAD

SR 482 PD&E Study  
Project Development Summary Report

Financial Project ID: 407143-3-22-01

Potential Contamination Sites and  
Ratings

Figure  
4-8



As a result of the data collection activities conducted, 26 potential contamination sites have been identified within the study area and have been assigned a “Low, Medium or High Contamination Risk Potential (CRP) Rating” in general accordance with the definitions in Chapter 22 of the FDOT PD&E guidelines. Of these, 15 sites have been assigned a risk rating of Low, 2 sites have been assigned a risk rating of Medium and 9 sites have been assigned a risk rating of High. These sites are described below.

There is a potential liability associated with acquisition of right-of-way which is contaminated. Additionally, contamination can have significant impact on construction, particularly underground utility construction and dewatering, since any contaminated groundwater that may be encountered would require treatment, disposal and special permitting. Excessively contaminated soil would require special treatment and disposal and could not likely be used suitable backfill material. For this reason, it is prudent to perform additional studies prior to actual design, property acquisition and construction of this project.

For all sites as having a Low-risk of contamination potential, it is recommend that the sites be re-evaluated to determine if any significant changes in status have occurred at Low-rated sites prior to new right-of-way acquisition or initiation of construction activities.

For sites classified as having a Medium- or High-risk of contamination, further review into the Public Record, particularly with regard to any Contamination Assessment or Remedial Action Plans, which may be generated in the interim period between the date of this report and the date of final design, should be performed. A preliminary soils screening evaluation involving auger borings and organic Vapor Analyzer (OVA) screening of soils, and installation and sampling of temporary groundwater monitoring wells (Preliminary Contamination Assessment, or PCA) should be performed to detect the presence of contaminants in the soil or groundwater.

The purpose of the PCAs will be to verify the presence of contaminants that could impact right-of-way acquisition, design and/or construction of the proposed roadway improvements. If the presence of such contaminants is verified, further delineation of the horizontal and vertical extent of the soil and/or groundwater contaminant plumes may be needed to supplement stormwater management system design, foundation design, and design of remedial strategies that may be necessary during construction to properly mitigate the impacted media without causing adverse impacts to workers and the environment. A summary of the 26 sites of potential contamination is included in *Table 4-6*.

The proposed project contains no known significant contamination.

**TABLE 4-6. SUMMARY OF POTENTIAL CONTAMINATION SITES**

Site No.	Site Name and Address	Contamination Risk Potential Rating	Hazardous Waste (H)/Petroleum Product (P)	Description
1	Lift Station	Low	P	No visible signs of leakage from AST. No documented discharge.
2	Days Inn 7335 SR 482 (Sand Lake Road)	High	P	Documented contamination on-site
3	Chevron 7331 SR 482 (Sand Lake Road)	High	P	Documented contamination on-site
4	7-Eleven 7329 SR 482 (Sand Lake Road)	High	P	Documented contamination on-site
5	Former 7-Eleven 7957 Turkey Lake Road	Medium	P	Potential remnant contamination on-site
6	BP Amoco 6942 SR 482 (Sand Lake Road)	High	P	Documented contamination on-site
7	Checkers (Former Chevron) 6908 SR 482 (Sand Lake Road)	High	P	Documented contamination on-site
8	Shell 6941 SR 482 (Sand Lake Road)	High	P	Documented contamination on-site
9	Mobil 6877 SR 482 (Sand Lake Road)	Low	P	Site Rehabilitation Completion Order
10	Perkins (Former Gas Station) 6813 SR 482 (Sand Lake Road)	High	P	Potential contamination on-site due to the use as a former gas station
11	Former Fun N Wheels 6739 SR 482 (Sand Lake Road)	High	P	Documented contamination on-site
12	Orlando Trade Center (Closed) 6221 SR 482 (Sand Lake Road)	Medium	P	No documentation on tank removal activities
13	Lockheed Martin 5600 SR 482 (Sand Lake Road)	Low	H/P	Documented groundwater contamination plumes outside study corridor
14	Maritec, Inc. 5974 SR 482 (Sand Lake Road) Marine Design 5980 SR 482 (Sand Lake Road)	Low	H/P	Small quantity hazardous waste generators. No documented violations.
15	Holiday RV Superstore 5001 SR 482 (Sand Lake Road)	Low	H/P	Small quantity hazardous waste generators. No documented violations.
16	Bellsouth 4959 SR 482 (Sand Lake Road)	Low	P	No documented discharges
17	B&A Auto Sales 8008 Mandarin Drive	Low	H/P	No documented violations
18	Bellsouth 7900 Mandarin Drive	Low	P	No documented discharges
19	Bellsouth 5100 Steyr Street	Low	P	Site Rehabilitation Completion Order
20	Texaco 4933 SR 482 (Sand Lake Road)	High	P	Documented contamination on-site
21	GES Exposition 4805 SR 482 (Sand Lake Road)	Low	P	NFA status
22	Orange County Fire Station 4765 SR 482 (Sand Lake Road)	Low	P	Site Rehabilitation Completion Order
23	Racetrac #412 4751 SR 482 (Sand Lake Road)	Low	P	No documented discharge
24	Orange County Public Works 4760 SR 482 (Sand Lake Road)	Low	P	Site Rehabilitation Completion Order
25	Hess #09347 2902 SR 482 (Sand Lake Road)	Low	P	No documented discharge
26	Lowe's 2800 SR 482 (Sand Lake Road)	Low	P	No documented discharge

UST - Underground Storage Tank

AST - Aboveground Storage Tank

NFA - No Further Action

H:\049013011\_SR 482\Contamination\Contamination Table.xls\Sheet1

## 5.0 PERMITS AND MITIGATION

### 5.1 Coordination and Permits

Agency coordination to obtain information on wetland habitats within the project area has occurred through the Efficient Transportation Decision Making (ETDM) Planning and Program Screening, the Advanced Notification process and individual conversations with staff at FWS, FFWCC and Orange County Environmental Protection Division (EPD), and the South Florida Water Management District (SFWMD). The ETDM Evaluation Form was submitted on July 12, 2004 with agency comments received by December 2004. A summary of the comments received from the Environmental Technical Advisory Team (ETAT) Members charged with commenting on project-specific direct effects is provided in *Table 5-1*.

Additional coordination with the environmental permit and permit review agencies has occurred through the Advanced Notification process. The Advanced Notification (AN) package was originally sent to local, state and federal agencies on July 11, 2005. Due to the addition of the Turnpike interchange to this project an updated AN package was distributed on December 15, 2005. Responses to the original Sand Lake Road project have been received from FDEP, SFWMD, NMFS, FWC and Orange County EPD. SFWMD stated that the project would require an Environmental Resource Permit, and that all wetlands within the project area should be identified, including those that will be impacted. NMFS stated that the proposed project would not impact areas that support NMFS trust resources. Orange County EPD recommended that wetland mitigation should occur within the Shingle Creek Hydrologic Basin. FDEP and FWC had no comments. The only responses received for the updated AN are from the FWS and Orange County EPD. The FWS stated that wetland impacts should be minimized and mitigation should occur within the same watershed basin. Orange County stated that their comments did not change from the original review of the project. Additional coordination with permit and permit review agencies will occur as design details are finalized.

**TABLE 5-1. SUMMARY OF ETAT NATURAL RESOURCES COMMENTS**

AGENCY	ISSUE	EXPECTED DEGREE OF EFFECT	COMMENTS	AGENCY INVOLVEMENT	STUDY FINDINGS
FDCA	Land Use	Minimal to None	No Comments - Continue Involvement	Continue	No Impact
FHWA	Wetlands	Minimal to None	Potential Wetland Impacts	Continue	Minimal
USACOE	Wetlands	Minimal to None	Avoid/Minimize Impacts to Shingle Creek Wetlands; Preserved Wetlands	Continue	Impacts to Shingle Creek Minimal
FDEP	Wetlands	Minimal to None	Avoid/Minimize Impacts to Shingle Creek Wetlands; Stormwater Treatment in Uplands; Address Cumulative Impacts; Drainage Flow to Lake Tohopekaliga	Continue	Impacts to Shingle Creek Minimal
USFWS	Wetlands	Minimal to None	Survey Wetlands; Assess Wildlife Functionality	Continue	Minimal wetlands and wildlife impacts
USEPA	Wetlands	Minimal to None	Wetland Impacts	Continue	Minimal
USFWS	Wildlife & Habitat	Minimal to None	Florida Scrub Jay Occurrence; Conduct Surveys in Suitable Habitat	Continue	No Impact
USEPA	Special Designations	Minimal to None	No Comment	Continue	None
FHWA	Historic & Arch.	Minimal to None	Potential Archaeological Impacts	Continue	No Impact
FL DEPT OF STATE	Historic & Arch.	Minimal to None	No Cultural Resources - Cultural Resource Survey Not Recommended	No Further Action	No Impact
FDEP	4(f)	Minimal to None	None	No Further Action	None
FHWA	4(f)	Minimal to None	Continue	Continue	None
USEPA	Air Quality	Minimal to None	No Comment - Continue	Continue	None
USEPA	Contamination	Minimal to None	Contaminated Sites Present	Continue	Minimal
USCG	Navigation	Minimal to None	None	No Further Action	None
USEPA	Floodplains	Minimal to None	Negative Impact to Shingle Creek Water Quality	Continue	Minimal floodplain impact; compensation provided
USEPA	Recreation Areas	Minimal to None	No Comment	Continue	None
FDEP	Water Quality & Quantity	Minimal to None	None	No Further Action	None
USEPA	Social	Minimal to None	Residential & Commercial Relocations; No Comment - Continue Agency Involvement	Continue	None
FHWA	Relocation	Minimal to None	Potential for Wetland Impacts	Continue	None

It is anticipated that the following permits will be required for this project:

- USACE Segment 404 Dredge and Fill Permit
- SFWMD Environmental Resource Permit
- FDEP National Pollutant Discharge Elimination System General Permit

## **5.2 Mitigation Expected**

Mitigation for approximate impacts of up to approximately 12.1 acres of wetlands for Sand Lake Road is anticipated. Although mitigation is not anticipated for impacts to 'other' surface waters as these areas are part of an existing drainage system, the USACE may claim jurisdiction, thus requiring an additional 4.3 acres of mitigation (upland-cut ditches are excluded). Consequently, mitigation for Sand Lake Road may be up to 16.4 acres. Mitigation will be accomplished pursuant to Section 373.4137 Florida Statutes.

## 6.0 SUMMARY OF PUBLIC INVOLVEMENT

A Public Involvement Program (PIP) was conducted for this project in order to obtain comments/input from the public, government officials, and agencies. The major elements of this program consist of an Advanced Notification (AN) package, Public and Agency Kickoff Meetings, a Public and Agency Alternatives Meetings, several individual meetings with key stakeholders, and a public hearing. Comment forms were handed out at the public meetings and feedback was solicited.

In an effort to reach out to the community, solicit feedback, and notify citizens of upcoming meetings, the Florida Department of Transportation (FDOT) sent direct mailings to property owners, renters, and tenants within 300 feet of the study corridor. In addition, direct mailings were sent to property owners, renters, and tenants along side streets where improvements are proposed. Invitations were hand delivered in select areas of potential impact. News releases to newspapers, radio, and TV stations were made to inform the public of meetings.

Below are key points that summarize the coordination efforts that have occurred during the project, as well as the discussions and concerns presented by each agency or stakeholder.

- Orange County has a pending developer funded improvement at the intersection of Sand Lake Road and Turkey Lake Road. Coordination will continue into design in an attempt to blend the project with PD&E results to avoid substantial reconstruction in this area.
- Granada plans imminent development in southeast quadrant of Turkey Lake Road and Sand Lake Road. Discussions have been held regarding a right-of-way swap to accommodate PD&E widening needs. (Note: It was believed that the County owns land between Granada site and I-4. It has been determined that the land is currently under FDOT ownership). Discussions continue.



- Granada has capacity rights to the existing surplus capacity in existing Pond 2A even though it is an Orange County pond. Discussions with Orange County continue.
- 7-Eleven is comfortable with right-of-way acquisition if on-site drainage is picked up in the Sand Lake Road system. They are supportive of PD&E project because developer improvement will eliminate existing right-turn lane which they deem to be very necessary. PD&E recommendations put it back.
- Vacant parcel adjacent to 7-Eleven wants to develop office in lieu of commercial (current zoning). Has joint use with 7-Eleven. Orange County is working with property owners for right-of-way.
- Rialto property under redevelopment. Orange County has been unable to obtain new right-of-way to date but discussions are continuing.
- McDonald's and Quality Inn – Concern over median opening being closed in front of their business. Additional concern over the need to retain frontage road function of the FDOT right-of-way adjacent to the site to provide circulation.

**Solution:** A directional opening will replace the full opening that exists today so they will have left in/right in – right out access. Response is positive as long as a median is not included on International Drive north of Sand Lake Road. The frontage road function will be retained.

- Fishbones – Concern over loss of parking row in front of their store and impacts to circulation aisle, landscaping, wall, and sign.

**Solution:** Recommended alternative provides everything except front row parking. Owner may consider using retention area in rear and acquiring a small part of adjacent property to replace parking. Sand Lake Road would need to pick

up onsite runoff in the roadway drainage system. Coordinate with Orange County to retain sign as a conforming use.

- Popeye's – Concern over hitting building. Highest volume Popeye's site in the area.

**Solution:** Provide wide sidewalk and stay away from building. Owner is supportive.

- Wyndham – Very concerned over circulation aisle, grades, and access.

**Solution:** Careful coordination during design. Potentially raise roadway grade to enhance access and circulation. Eliminate or reduce the gravity walls by matching grade to the extent possible.

- Bargain World – Would like to have the median opening on International Drive in front of Aussie Steakhouse moved further north, in front of their business.

**Solution:** A meeting was held 2/28/06 to discuss options. Do not plan to adjust due to confusion of lane use signing for dual lefts.

- Lockheed Martin – Area needed for retention pond; access.

**Solution:** New property owner desires further study of pond alternatives which can only now be considered due to common ownership. New property owner will present conceptual access plan to FDO T when available.

- Tangelo Park – Cut through traffic; Mandarin Drive intersection solution.

**Solution:** No real issues – successful coordination.

- Shingle Creek Trail (numerous agencies) – Provision of grade separation with Sand Lake Road.

**Solution:** Agencies support recommended alternative.

- Access change at Kingspointe Parkway – signal location change.

**Solution:** Racetrac coordination; agreeable to change.

- Access change at Greenbriar Parkway – County opposes signalization.

**Solution:** Two step solution to help intersection work unsignalized and transition to signalized if needed. Geometry precludes connection to south which would reduce intersection efficiency.

- Restriction of ramp traffic from SB Kirkman Road from turning left at Universal Boulevard. Tourists may not follow alternate route and would be forced to use more congested International Drive intersection. City of Orlando opposes restriction as it may impact City streets.

**Solution:** Realign southbound to westbound ramp.

- Pedestrian access to LYNX bus facilities.

**Solution:** Pedestrian access to bus facilities needs to be maintained throughout the project corridor during construction. During construction, contractors also need to be made aware they should not remove LYNX signs when performing their duty of removing signs from the constructed roadway. Landing pads/sidewalk access should be provided wherever there is a bus stop and the sidewalk is not at the curb.

- Sidewalks along corridor. Orange County preferred that continuous sidewalks be provided on both sides throughout the corridor. Sidewalks are included throughout most of the corridor.

**Solution:** A value engineering review considered the low level of potential use of sidewalks through the Kirkman interchange together with the fact that the interchange will most likely be replaced in the future and sidewalks would be reconstructed. In a similar way, it was determined that there was very little potential pedestrian demand on the north side of Sand Lake Road from Shingle Creek to east of Florida's Turnpike since the land from Kingspointe Parkway to east of the Turnpike will remain undeveloped permanently. Further, a single point interchange is planned at John Young Parkway and an additional interchange is planned at the Turnpike. Due to interchange complexities, it would be better to not attract pedestrians to the north side of Sand Lake Road in these areas. For the foregoing reasons, sidewalks were omitted through the Kirkman Road interchange and on the north side of Sand Lake Road from Shingle Creek to east of Florida's Turnpike.

A public hearing was held on May 25, 2006. Comments submitted as a part of the official Public Hearing record will be included in the Public Hearing Transcript and Summary and are contained in *Appendix M*. Concerns relate to pond alternatives for Pond 5B and widening impacts between International Drive and Universal Boulevard. These items will be addressed in design when more detailed survey data are available. Close coordination with the representatives of the four properties should be maintained.

# Part II

## Turnpike Interchange

## 7.0 RECOMMENDED INTERCHANGE ALTERNATIVES

The recommended build alternative provides an interchange at Sand Lake Road. Concept plans are provided in *Appendix N*. New ramps would provide access to and from Florida's Turnpike north and south. Westbound Sand Lake Road traffic would be provided access to Florida's Turnpike northbound by means of a diamond ramp. A loop ramp would provide westbound traffic access to Florida's Turnpike southbound. Eastbound traffic on Sand Lake Road would have access to Florida's Turnpike northbound and southbound via diamond ramps. Southbound traffic exiting Florida's Turnpike for Sand Lake Road would utilize a ramp aligned with the existing commercial center entrance on the south side of Sand Lake Road between John Young Parkway and Florida's Turnpike. The southbound exit ramp for Florida's Turnpike to Sand Lake Road would begin north of the Turnpike bridge over Shingle Creek and would extend parallel to Florida's Turnpike under the John Young Parkway bridge. The ramp intersection would be signalized. No change in the commercial center access would occur except that existing right-in/right-out and left-in turns would come under signal control. A second inbound left-turn lane would be provided. Outbound lefts would continue to be prohibited. The ramp would have five approach lanes at the intersection. Dual left-turn and right-turn lanes would be provided. A center lane would have the option of left, through, or right. This would allow flexible response to the significant difference in turning patterns projected for the morning and afternoon peak periods.

The northbound off ramp would have a single right-turn lane and dual left-turn lanes. Dual lefts would be provided onto the northbound on ramp. The northbound on/off ramp intersection would be signalized.

The westbound Sand Lake Road bridge over Florida's Turnpike would be replaced in order to match the vertical profile of the eastbound bridge thus allowing turns onto and off of interchange ramps. The eastbound Sand Lake Road bridge would be widened on both sides to accommodate a sidewalk on the south side and left-turn lanes and replacement of the westbound bridge on the north side. This interchange improvement

also requires the replacement of the south end spans of the John Young Parkway bridges over Florida's Turnpike in order to accommodate the new exit ramp.

Sun Pass-Only toll plazas would be located north of Sand Lake Road for the northbound Turnpike entrance from Sand Lake Road and the southbound Turnpike exit to Sand Lake Road. Both of these ramps would be two lanes to accommodate the heavier demands to and from the north.

Additional right-of-way would be required along the northeast, southwest and southeast quadrants of the Sand Lake Road interchange to accommodate the new ramps.

## **7.1 Design Criteria**

*Table 7-1* summarizes the major design criteria for the project. All criteria are subject to change and only the current criteria will be used during the final design.

## **7.2 Lighting**

Appropriate lighting for the proposed interchange will be provided in accordance with the current Turnpike Plans Preparation and Practices Handbook.

## **7.3 Right of Way**

The existing right-of-way on Florida's Turnpike varies between 400 and 500 feet. The right-of-way on Sand Lake Road is typically 200 feet. Most of the needed right-of-way is available for development of the interchange and to provide ponds for water management and flood plain mitigation. However, limited right-of-way will be needed on three quadrants of the interchange near the ramp intersections with Sand Lake Road. A total of 0.34 acres will be required from three parcels. Water management and floodplain mitigation will be provided on property owned by the FDOT.

**TABLE 7-1. DESIGN CRITERIA MATRIX**

Design Element	Rural Freeway Section 70 MPH Design Speed	Single Lane Ramps < 45 MPH Design Speed	Single Lane Ramps 45 to 50 MPH Design Speed	Single Lane Ramps 55 MPH Design Speed	Multilane Ramps 45 to 50 MPH Design Speed	Multilane Ramps 55 MPH Design Speed	Source
<b>Cross Section</b>							
Lane Width	12 ft	12 ft	12 ft	12 ft	12 ft	12 ft	Table 2.1.1 <sub>1</sub>
Clear Zone							
20 YR AADT < 1500	30 ft	10 ft	14 ft	14 ft	20 ft	24ft	Table 2.11.9 <sub>1</sub> Table 2.11.10 <sub>1</sub>
20 YR AADT ≥ 1500	36 ft	10 ft	14 ft	18 ft	24 ft	30 ft	Table 2.11.9 <sub>1</sub> Table 2.11.10 <sub>1</sub>
Median Width	26 ft <sub>3</sub>	-	-	-	-	-	Table 2.2.1 <sub>1</sub>
<b>Cross Slope</b>							
Inside Lanes	0.02	0.02	0.02	0.02	0.02	0.02	Figure 2.1.1 <sub>1</sub>
Outside Lanes	0.03	0.03	0.03	0.03	0.03	0.03	Figure 2.1.1 <sub>1</sub>
Outside Shoulder	0.06	0.06	0.06	0.06	0.06	0.06	Table 2.3.1 <sub>1</sub>
Median Shoulder	0.06	0.05	0.05	0.05	0.05	0.05	Table 2.3.1 <sub>1</sub>
Shoulder Width	Outside 12 ft (10 ft Paved)	Outside 6 ft (4 ft Paved)	Outside 6 ft (4 ft Paved)	Outside 6 ft (4 ft Paved)	Outside 12 ft (10 ft Paved)	Outside 12 ft (10 ft Paved)	Table 2.3.1 <sub>1</sub>
	Median 12 ft (10 ft Paved)	Median 6 ft (2 ft Paved)	Median 6 ft (2 ft Paved)	Median 6 ft (2 ft Paved)	Median 8 ft (4 ft Paved)	Median 8 ft (4 ft Paved)	
Border Width	94 ft <sub>4</sub>	94 ft <sub>4</sub>	94 ft <sub>4</sub>	94 ft <sub>4</sub>	94 ft <sub>4</sub>	94 ft <sub>4</sub>	Table 2.5.1 <sub>1</sub>
<b>Horizontal Alignment</b>							
Minimum Curve Radius	1637 ft	559 ft	694 ft	881 ft	694 ft	881 ft	Table 2.9.1 <sub>1</sub>
Maximum Deflection (No Curve)	0° 45' 00"	0° 45' 00"	0° 45' 00"	0° 45' 00"	0° 45' 00"	0° 45' 00"	Table 2.8.1a <sub>1</sub>
Maximum Superelevation	0.10	0.10	0.10	0.10	0.10	0.10	Table 2.9.1 <sub>1</sub>
<b>Vertical Alignment</b>							
Maximum Grade	3% (Flat Terrain)	3% to 5% (Flat Terrain)	3% to 5% (Flat Terrain)	3% to 5% (Flat Terrain)	3% to 5% (Flat Terrain)	3% to 5% (Flat Terrain)	Table 2.6.1 <sub>1</sub>
Base Clearance Above Design High Water	3 ft	2 ft	2 ft	2 ft	2 ft	2 ft	Table 2.6.3 <sub>1</sub>
Minimum Stopping Sight Distance	820 ft	360 ft	425 ft	495 ft	425 ft	495 ft	Table 2.7.1 <sub>1</sub>
Vertical Curve K Values	K = 506 (Crest)	K = 98 (Crest)	K = 136 (Crest)	K = 185 (Crest)	K = 136 (Crest)	K = 185 (Crest)	Table 2.8.5 <sub>1</sub>
	K = 206 (Sag)	K = 79 (Sag)	K = 96 (Sag)	K = 115 (Sag)	K = 96 (Sag)	K = 115 (Sag)	Table 2.8.6 <sub>1</sub>

**Notes:**

1. Plans Preparation Manual, 2005, Florida Department of Transportation
2. Design Standards for Design, Construction, Maintenance and Utility Operations on the State Highway System, 2004, Florida Department of Transportation
3. Based on 2 ft median barrier and 12 ft shoulder
4. Measured from the edge of the outside traffic lane to the R/W. Width may be reduced in area of crossroad terminal as long as design meets requirements for clear zone, horizontal clearance, drainage, maintenance access, etc.



## 7.4 Access Management

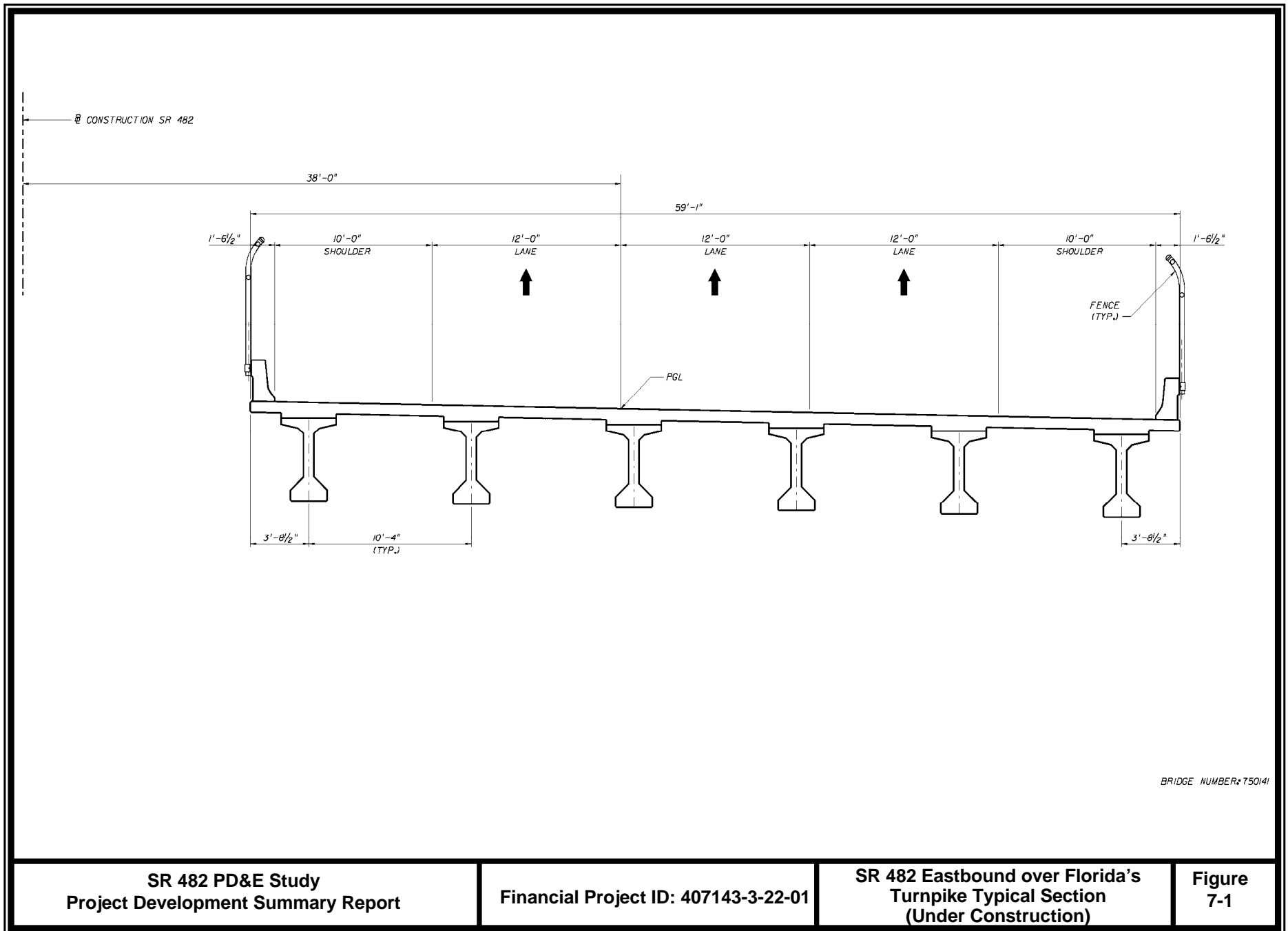
In order to assure the necessary function of the Turnpike southbound off ramp intersection, it is essential that no change in access for the commercial center to the south be permitted. Currently the center is allowed left-in, right-in, and right-out. The intersection will be signalized such that the left-ins will be under signal control. Dual left-turn lanes are recommended. The left turn out movement is currently prohibited. This movement must remain prohibited. Provision of this extra traffic signal phase at this location would have serious operational impacts on the Turnpike ramp and Sand Lake Road intersection.

## 7.5 Structures

There are five structures that will be affected by the proposed interchange. These include the eastbound and westbound Turnpike bridges on Sand Lake Road, the northbound and southbound bridges on John Young Parkway, and the southbound Turnpike bridge over Shingle Creek.

Sand Lake Road currently crosses over the Florida's Turnpike with separate eastbound and westbound structures. Sand Lake Road westbound (Bridge No. 750294) is a two-lane structure that is approximately 30 years old. It has a four-span configuration that provides a 70' horizontal envelope for each direction of the Turnpike. The bridge is currently being widened to provide a third 12'-0" travel lane and 10'-0" shoulders, and is scheduled to be complete in 2007. Sand Lake Road eastbound (Bridge No. 750568) is being replaced as a part of the same construction project, and will be a two-span configuration with approximately 95' of horizontal envelope over each direction of the Turnpike. The new bridge will provide three 12'-0" travel lanes and two 10'-0" shoulders (see *Figure 7-1*).

The recommended alternative requires the replacement of the westbound Sand Lake Road bridge over Florida's Turnpike due to profile and horizontal envelope deficiencies, and the widening of the eastbound bridge to effectively become one structure.



The existing westbound Sand Lake Road bridge will be removed and the existing eastbound Sand Lake Road bridge will be widened 10'-3" on the south side to provide a 6' sidewalk and 81'-9" on the north side. The overall widened structure will be 144'-6" wide and will provide three 12'-0" through travel lanes in each direction, two 12'-0" turn lanes in the eastbound direction, and 6' sidewalks along each side (see *Figure 7-2*). Additionally, extensive retaining walls will be required along the loop ramp and new Turnpike ramps. The southbound Turnpike off ramp would exit prior to the John Young Parkway bridges (Bridge No. 754097 and 754098). This would require removal of the southernmost spans and southern concrete spill slope at the John Young Parkway bridges and replacement with a longer end span and vertical faced abutment wall to provide the required horizontal envelope (approximately 47').

Finally, the southbound Turnpike bridge over Shingle Creek (Bridge No. 750065) will be widened 12 feet to accommodate the southbound exit lane.

## **7.6 Utilities**

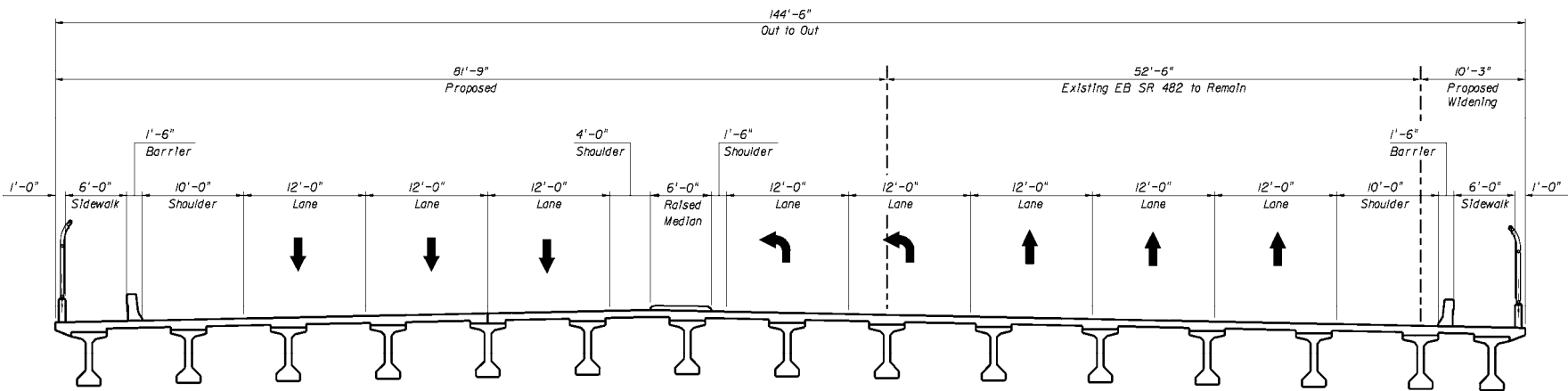
All known utility companies in the area were contacted. Several individual meetings were held with utility owners to discuss their facilities and potential impacts due to this proposed project. The team met with Progress Energy Distribution, Progress Energy Transmission and Orange County Utilities. The utilities and their existing and proposed facilities are described below. The utility plans and report are provided on CD.

### **7.6.1 Existing Facilities**

Existing facilities are shown in *Table 7-2*.

### **7.6.2 Proposed Facilities**

Orange County Utilities will replace a 24-inch DIP Force Main (FM) throughout the project corridor due to its failure at several locations.



BRIDGE NUMBER: 750568

SR 482 PD&E Study  
Project Development Summary Report

Financial Project ID: 407143-3-22-01

SR 482 over Florida's Turnpike  
Typical Section (Proposed)

Figure  
7-2

**TABLE 7-2. EXISTING UTILITIES**

Description	Roadway Location	Type of Utility	Company Name	Service	Facilities
SR 482 West of John Young Parkway to Presidents Drive	North Side	Electric	Progress Energy Florida, Inc.—Distribution	Overhead	Double circuit
		Electric	Progress Energy Florida, Inc.—Transmission		69 kV transmission lines
		Sewer and Water	Orange County Utilities	Force Main, Sanitary and Reuse	At John Young Pkwy: north side has 42" DIP FM, At Turnpike: north side has 42" DIP FM in casing below Turnpike (size unknown), At Presidents Drive: north side has 42" DIP FM
		Gas	Peoples Gas (TECO)	Low Pressure	4" steel gas line
		Telecommunications	MCI/Verizon Business	Long Distance	One line heads to north to Progress Energy Substation
		Cable Television	Bright House Networks	CATV	Aerial and underground facilities the entire length. When aerial they are underbuilt with the power company. Underground crossing at the Turnpike on the south side.
	South Side	Electric	Progress Energy Florida, Inc.—Distribution	Overhead	Double circuit
				Underground	Feeder
		Sewer and Water	Orange County Utilities	Force Main, Sanitary and Reuse	At John Young Pkwy: south side has 12" and 14" CIP FM's OOS, west side of JYP heading south are a 16" DIP FM, 10" PVC FM and 16" HDPE FM. At Turnpike: south side has 12" and 14" CIP FM's OOS. At Presidents Drive:south side has 14" CIP FM, 12" CIP FM (OOS), 10" VCP sanitary line and 15" VCP sanitary line crossing on the west side.
		Gas	Peoples Gas (TECO)	Low Pressure	8" steel gas line heads south on east side of JYP and continues to east with 4"
		Telecommunications	Orlando Telephone	Local Carrier	Existing facilities, both aerial and buried
		Cable Television	Bright House Networks	CATV	Aerial and underground facilities the entire length. When aerial they are underbuilt with the power company. Underground crossing to south at Turnpike.
Florida's Turnpike South of Sand Lake Road to North of John Young Parkway	East Side	Gas	Florida Gas Transmission	High Pressure	24" steel line on east side of Turnpike
	Center Median	Telecommunications	AT&T	Long Distance	Existing facilities (FOC), buried

## **7.7 MOT (Maintenance of Traffic)**

### **7.7.1 John Young Parkway Bridges over Florida's Turnpike (Southbound Bridge No. 754097 and Northbound Bridge No. 754098)**

For the northbound and southbound CR 423 (John Young Parkway) bridges, the traffic control along CR 423 (John Young Parkway) provides for construction of temporary pavement in the median to provide adequate width for the shifting of traffic. Northbound traffic would be shifted onto the southbound bridge, maintaining two travel lanes in each direction. The northbound bridge end span and roadway approach would be reconstructed. Then all traffic would be shifted to the northbound bridge and the southbound bridge end span and approach roadway would be reconstructed. This construction should be completed in conjunction with the CR 423 (John Young Parkway)/Sand Lake Road SPUI and SR 423 six-laning to avoid throwaway bridge widening needed to maintain six lanes.

For Florida's Turnpike, traffic would be shifted to the inside in the southbound direction, maintaining four travel lanes in each direction.

### **7.7.2 Sand Lake Road Bridges over Florida's Turnpike (Westbound Bridge No. 750294 and Eastbound Bridge No. 750568)**

#### **7.7.2.1 Sand Lake Road**

The traffic control along Sand Lake Road provides for widening of the eastbound Sand Lake Road to provide three travel lanes in each direction. The south side of the eastbound bridge would first be widened to accommodate the future sidewalk (which will be used as driving surface during traffic control). Traffic on the westbound bridge would then be shifted to the north to create a work area for the partial bridge demolition. The westbound bridge would be partially demolished to allow for widening of the eastbound bridge. All traffic would be shifted to the eastbound bridge and the remaining portion of the existing westbound bridge would be removed. The bridge construction would be completed and roadway approaches would be constructed then traffic would be shifted to its final location.

#### 7.7.2.2 Florida's Turnpike

For Florida's Turnpike, traffic would be shifted to the outside in both the southbound and northbound directions to allow for construction of the center piers at Sand Lake Road. This would maintain four travel lanes in each direction. Traffic pacing operations would be used as needed on one direction of the Turnpike at a time for demolition and beam placement. Temporary reductions in the number of through lanes during off-peak hours would be implemented in combination with traffic shifts to facilitate bridge construction and widening over the Turnpike. Traffic would then be returned to its final location.

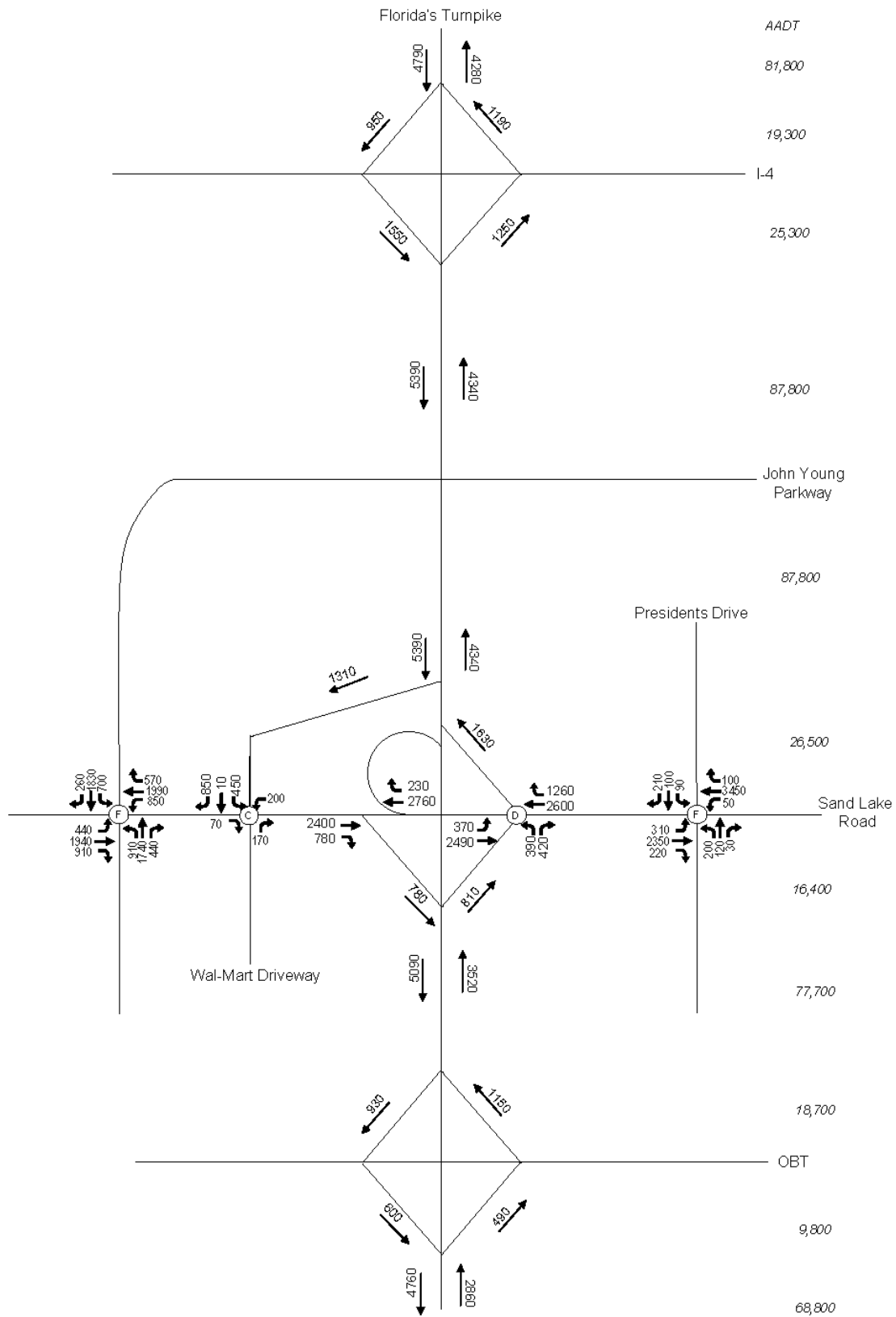
Ramps, frontage roads, retaining walls and Sun-Pass Only Toll Plazas would be constructed in the main traffic control phases. One lane of Florida's Turnpike, CR 423 (John Young Parkway) and Sand Lake Road would be closed as necessary to construct ramp tie-ins.

#### 7.7.3 Florida Turnpike Bridge over Shingle Creek (Bridge No. 750065)

The southbound Shingle Creek bridge can accommodate existing traffic lanes by shifting traffic to the inside, using the available shoulder and widening to the outside. Four lanes would be maintained during the bridge widening.

### 7.8 Design Traffic

Average Annual Daily Traffic (AADT), Design Hour Volumes (DHV) and Level of Service (LOS) for the recommended alternative for 2010, 2020 and 2030 are shown *Figures 7-3, 7-4, and 7-5*. The Design Traffic Report is provided on CD.



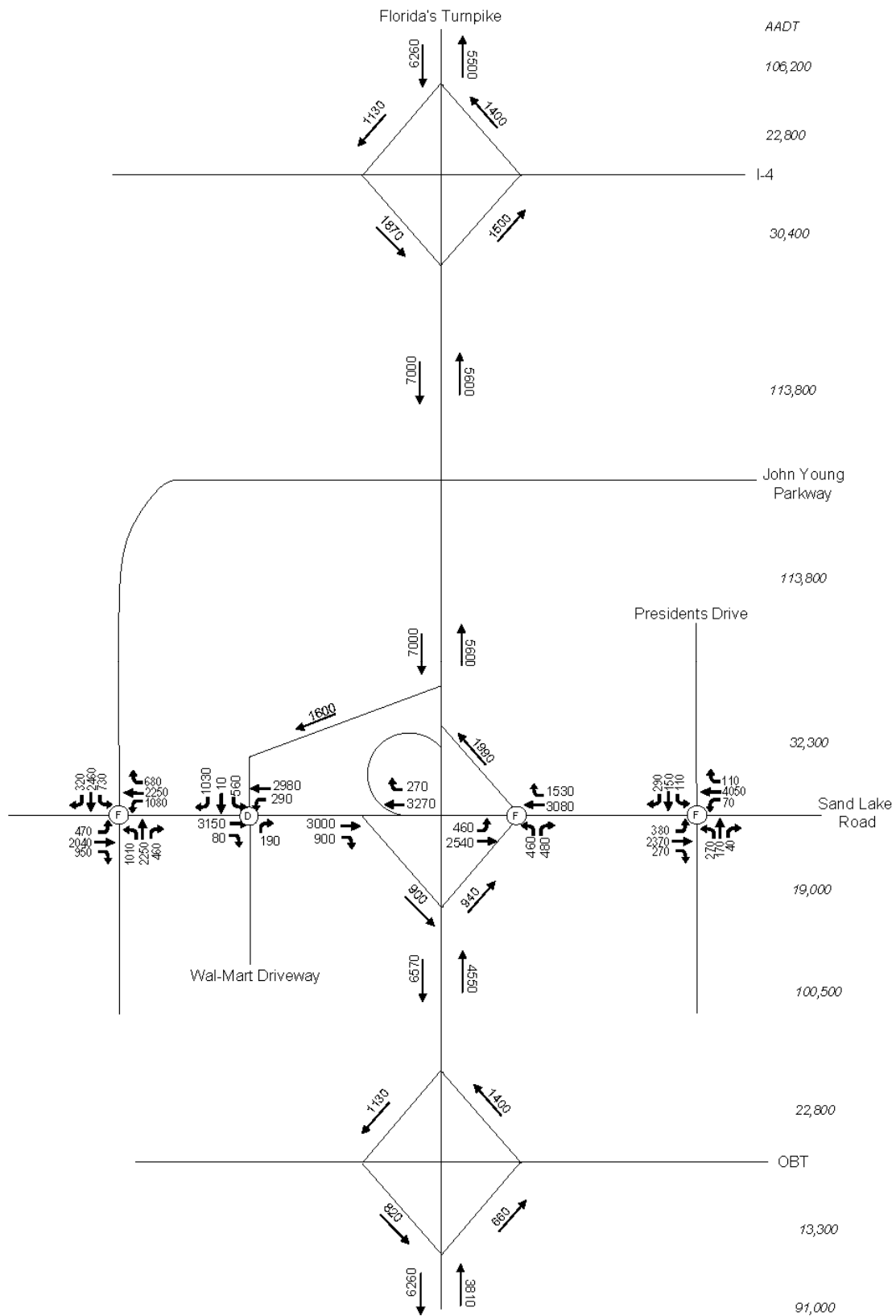
SR 482 PD&E Study  
Project Development Summary Report

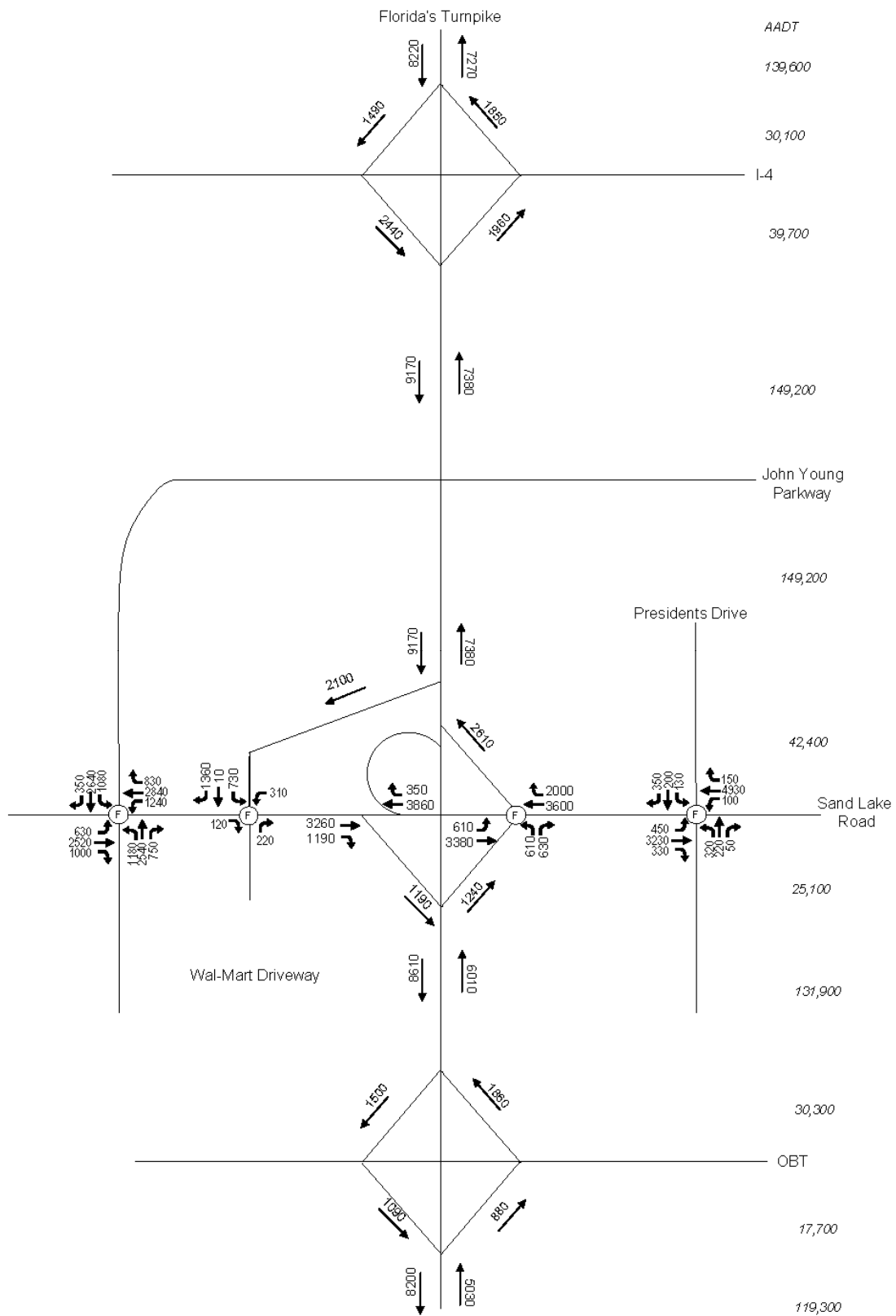
Financial Project ID:  
407143-3-22-01

Recommended  
Alternative  
2010 AADT/DHV/LOS

Figure  
7-3







## 7.9 Drainage Plan

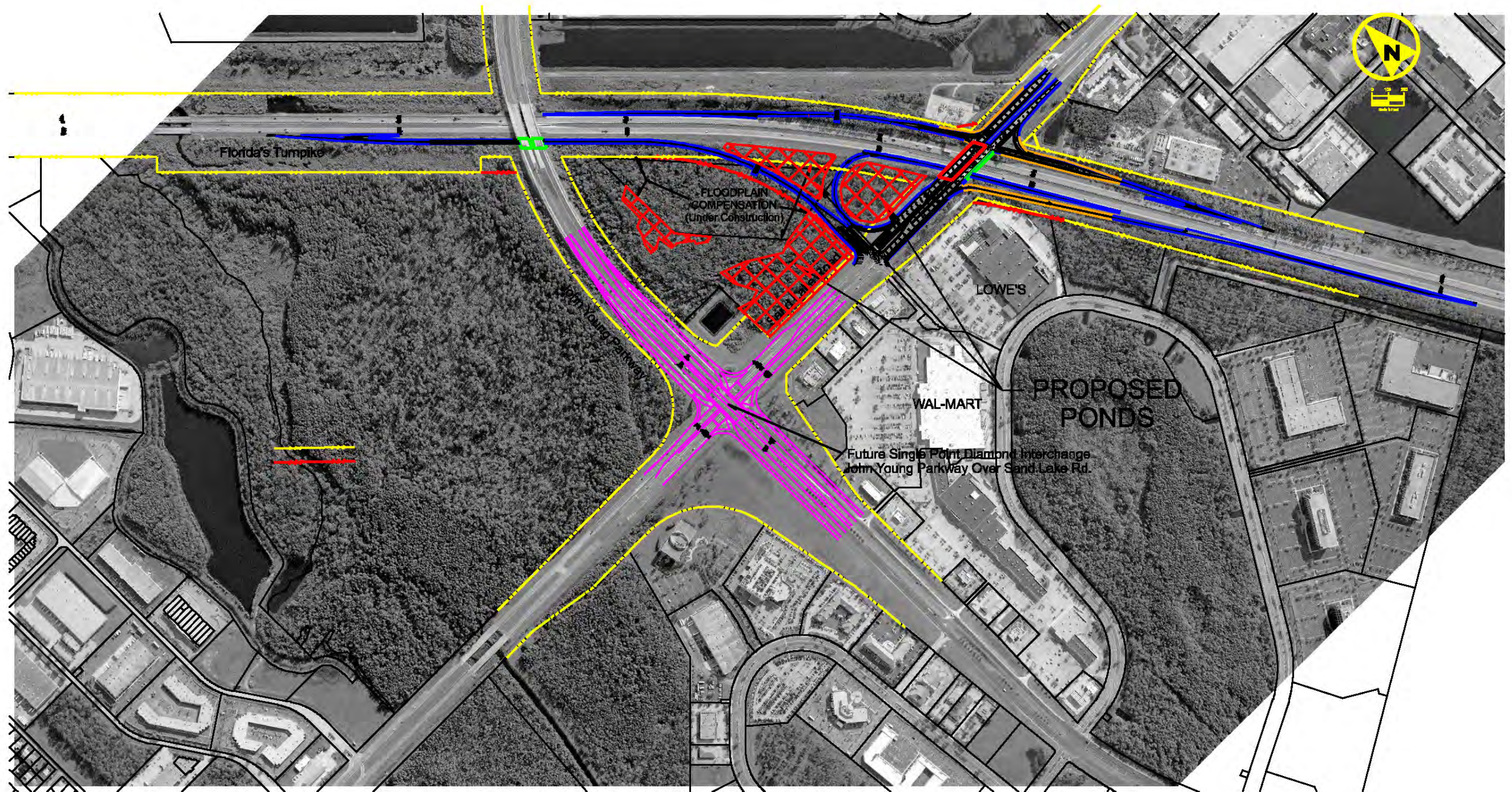
Based on a review of existing topographic aerial photography, USGS quadrangle maps, FEMA Flood Insurance Rate Maps (FIRM), Natural Resource Conservation Service (NRCS) soils information, and supporting information, one (1) major basin has been identified within the project limits. The drainage basin is headwaters to Shingle Creek eventually reaching the Kissimmee River and has two drainage sub-basins. The first drainage sub-basin is the section of Florida's Turnpike south of Sand Lake Road that drains west toward Shingle Creek via roadside swales on Sand Lake Road. The second drainage sub-basin is from Sand Lake Road extending northward to Shingle Creek along the Turnpike. In sub-basins, floodplain areas and surrounding ditches convey stormwater runoff. Currently water quality treatment is not provided along the corridor with the exception of isolated areas of recent development and the permitted portion of the Turnpike widening presently under construction.

The proposed drainage considers the entire improvement area acting as one basin contributing to one pond site and will be collected by a combination of an open and closed drainage systems. The actual condition will likely not capture 100% of the basin runoff for the project limits. Nonetheless, the proposed limits of the improvements are considered as though the runoff can be captured, treated, and attenuated. The pond size will provide an over-treatment and attenuation for the runoff captured by the proposed pond. The pond location is shown on *Figure 7-6*. The final drainage solutions will be defined during design in consultation with South Florida Water Management District (SFWMD) and other regulatory agencies.

## 7.10 Geotechnical Considerations

The NRCS Soil Survey of Orange County, Florida was reviewed to obtain near surface soil and groundwater information along the recommended roadway alignments. According to the NRCS maps, surficial soils along the Sand Lake Road project alignment consist primarily of fine sands containing varying amounts of silt. Isolated locations of surficial organic deposits are also present within the study area.







The NRCS predicts seasonal high groundwater levels ranging from 2 feet above the ground surface (in wetland areas) to greater than 6 feet below the ground surface (in upland sand ridges). The majority of the soil units identified in the project area are generally appropriate for use as embankment fill. However, the organic soils (A-8) associated with the Samsula, Hontoon and Sanibel muck soil units will have severe limitations for roadway construction and will likely require removal prior to embankment placement (if not already removed during original roadway construction). Additionally, the depressional soils associated with the Basinger fine sand soil unit often contain surficial muck (A-8) deposits which will also require removal prior to roadway construction. These soil types may affect construction through the Shingle Creek area.

The NRCS soil units that are most frequently identified throughout the project study area are Pomello fine sand, St. Johns fine sand and Smyrna fine sand. These soils are classified as nearly level to gently sloping, poorly to moderately well drained sands associated with low ridges and knolls on the flatwoods and on broad flats on the flatwoods. Although the above soil units are suitable for use as roadway embankment fill, they all have excessively high seepage rates. These high seepage rates are commonly associated with the granular nature of these soils; therefore, there are slope stability concerns associated with these fine sands that may need to be considered in designing pond excavations.

The roadway auger borings performed along the Sand Lake Road alignment typically encountered fine sand to fine sand with silt (A-3) and silty fine sand (A-2-4) throughout the depths explored. Exceptions to these observations were found in the vicinity of Shingle Creek. Five feet of mucky fine sand was observed at this location. This can also be expected in the Shingle Creek area along Florida's Turnpike.

It should be noted that the project vicinity is an area of "high recharge" to the Floridan aquifer, and an area where the risk of sinkhole formation is high compared to other regions in Florida. However, on the basis of SPT borings taken to date, the risk of sink

holes on this corridor is considered low when compared to Central Florida background risk.

## **7.11 Special Considerations Affecting Selecting Recommended Alternative**

### **7.11.1 No-Build**

The No-build alternative has no improvement costs and no impacts to the natural environment at the study location. However, there would be significant costs involved in providing improvements at other interchanges to accommodate future traffic demand. These include high cost, potentially high impact reconstruction options at the Turnpike/I-4 interchange and the Turnpike/Beachline interchange. This would result in no system-wide improvements to address the access needs accommodated by the proposed build alternative. The extensive delay created by growing traffic demand and no increased capacity would negatively impact the roadway system and increase crash potential. Delay to motorists from a system perspective would be unacceptable.

### **7.11.2 Overview of Build Alternatives**

Seven interchange alternatives were considered in developing the recommended build alternative. These are described and evaluated in *Appendix O*. The alternatives include options for an interchange at Sand Lake Road, at John Young Parkway and various combinations of access to both of these roadways. As noted in the appendix, some fatal flaws were identified in many of the alternatives. Alternative 1, Single point urban interchange at John Young Parkway, was very costly and created excessive delay at the planned single point urban interchange at John Young Parkway and Sand Lake Road. Alternative 2, a split diamond configuration, was found to have unacceptable weave distances between on and off ramps. Alternative 3, a split diamond with braided ramps, was costly and provided extra delay at the John Young/Sand Lake interchange. Alternative 4, an interchange at Sand Lake Road only, had a fatal flaw of a ramp terminal too close to the John Young Parkway overpass. Alternatives 5, split diamond with frontage roads, and 5A, split diamond without frontage roads, were also costly and had related operational or capacity deficiencies. Alternative 7, a Sand Lake Road interchange

with added ramps at John Young Parkway, was also costly and did not show any real benefits for the added cost.

It was determined that Alternatives 4A and 6 were the only viable alternatives to be further considered. Both alternatives provide a full interchange at Sand Lake Road. Alternative 6 provides a standard diamond configuration with ramp intersections spaced at 300 feet. Alternative 4A provides a loop for westbound to southbound traffic and provides greater spacing between the ramp intersections. These two alternatives were evaluated operationally. The results are provided in *Appendix P*. It was determined that Alternative 4A is the recommended build alternative.

#### 7.11.3 Selection of Recommended Alternative

The No-build interchange alternative and the build alternative were compared. The No-build alternative does not change the operations on either Sand Lake Road or Florida's Turnpike. Costly upgrades to the Turnpike interchanges at I-4 and at SR 528 (Beachline Expressway) as shown in the Turnpike Enterprise 2005-2025 Master Plan (Dated December 2005) Twenty-Year Cost Feasible and Needs Plan would potentially need to occur as planned.

The build alternative improves the operating conditions at the John Young Parkway/Sand Lake Road interchange but reduces the level of service at the Sand Lake Road Presidents Drive intersection. An additional benefit of the Build Alternative is that it reduces the traffic volumes at the existing Turnpike interchanges at I-4 and Beachline Expressway by shifting the demand to the new access. This could potentially extend the useful life of the existing Turnpike interchanges.

The proposed Turnpike interchange also provides a significant improvement for Turnpike access to the International Drive Activity Center area which includes the Orange County Convention Center. This additional access also reduces the peak demands on I- 4.

For the forgoing reasons, the build alternative is the recommended alternative.

## 7.12 Project Costs

Costs for the project are listed in Table 7-3. Construction costs are provided by the Turnpike LRE System. Right-of-way costs were provided by the Turnpike right-of-way department.

**TABLE 7-3. PROJECT COSTS**

<b>Cost (Millions)</b>	
Construction	\$39.8 <sup>(1)</sup>
Mitigation	\$1.7
Right-of-Way	\$0.9 <sup>(2)</sup>
Design	\$5.6
CE&I (10%)	\$4.0
Construction Incentive	N/A
<b>Total Project Cost</b>	<b>\$52.0</b>

<sup>(1)</sup> LRE date 5/8/06

<sup>(2)</sup> Right-of-way cost date 4/19/06



## **8.0 SUMMARY OF ENVIRONMENTAL IMPACTS**

### **8.1 Avoidance/Minimization Measures**

All measures have been considered to minimize impact to wetlands and surface waters. Widening of the southbound Turnpike bridge over Shingle Creek will occur along the existing alignment to avoid impacts to adjacent wetlands. Pond locations will be selected to avoid/minimize impacts to wetlands. BMPs and erosion control measure will be implemented during construction

### **8.2 Environmental Impact Evaluation**

The following provides the supporting information for the Class of Action Determination for this project. The Environmental Class of Action Determination is contained in *Appendix H*. There are no significant impacts associated with this project.

#### **8.2.1 Social Impacts**

##### **8.2.1.1 Land Use Changes**

The project is located within an urban environment. In general, the existing land use within the project area consists primarily of commercial uses, including several hotels, restaurants and retail shops; office, institutional, industrial and conservation uses are also present. In addition, some undeveloped rural lands are also present. No residential uses are present along Sand Lake Road or the Florida's Turnpike, within the project area. Major facilities within the project area include Lowes and Wal\*Mart south of Sand Lake Road and a conservation area north of Sand Lake Road.

The project area is essentially built out. The most dominant undeveloped parcel of land is the conservation lands associated with the Shingle Creek basin. No substantial effect on land development or land use patterns is expected as the land use pattern for this area is already well established. New development will occur within the project area with or without the roadway improvements.

Changes in future land uses have been identified to be consistent with METROPLAN ORLANDO's Long Range Transportation Plan (LRTP) for 2025, METROPLAN ORLANDO's Transportation Improvement Program (TIP) for the fiscal years 2004/05 – 2008/09, approved on July 14, 2004, Orange County's Comprehensive Policy Plan, and the City of Orlando Comprehensive Plan. The proposed project is consistent with the LRTP.

#### 8.2.1.2 Community Cohesion

The pattern of development has been established within the project area. No residential communities are located along Sand Lake Road. The area along Sand Lake Road supports the tourism trade with hotels and restaurants prevalent and large retail and developing commercial uses. The new interchange will not isolate or split existing neighborhoods/residential areas or impact any community facilities.

The new Turnpike interchange will improve congestion and enhance safety on the existing road network and the existing interchanges to the north and south (i.e., I-4 and the Beachline, respectively). Currently drivers with destinations on or around Sand Lake Road must exit at either of these two interchanges and then travel the surface roads to reach their destination. The new interchange will allow drivers to directly access Sand Lake Road which will bring them closer to their destination and reduce congestion at the other interchanges and surface roads. However, traffic on Sand Lake Road will increase. No community concerns have been identified and no impacts to cultural facilities will occur.

#### 8.2.1.3 Relocation Potential

The recommended alternative does not require any residential or business relocations. Further, no sign relocations are anticipated. A total of 0.34 acres of right-of-way will be required from three parcels for the new Turnpike interchange.

The proposed project, as presently conceived, will not displace any residences or businesses within the community. Should this change over the course of the project, the Florida Department of Transportation will carry out a Right of Way and relocation

program in accordance with Florida Statute 339.09 and the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (Public Law 91-646 as amended by Public Law 100-17). The brochures that describe in detail the Department's relocation assistance program and Right of Way acquisition program are "*Your Relocation: Residential*", "*Your Relocation: Business, Farms and Nonprofit Organizations*", "*Your Relocation: Signs*" and "*The Real Estate Acquisition Process*." All of these brochures are distributed at all public hearings and made available upon request to any interested persons.

#### 8.2.1.4 Community Services

Numerous retail stores and restaurants are present in the project area. There are no other community resources located within the project area. No impact to any of these facilities is anticipated.

#### 8.2.1.5 Title VI Considerations

This project has been developed in accordance with the Civil Rights Act of 1964, as amended by the Civil Rights Act of 1968.

#### 8.2.1.6 Controversy Potential

A Public Involvement Program (PIP) was conducted for this project in order to obtain comments/input from the public, government officials, and agencies. The major elements of this program to date consist of an Advanced Notification (AN) package, Public and Agency Kickoff Meetings, a Public and Agency Alternatives Meetings, several individual meetings with key stakeholders, study advisory team meetings, and a public hearing.

In addition, an Advanced Notification (AN) package was originally distributed to local, state and federal agencies and representatives on July 11, 2005 for the Sand Lake Road project. Due to the addition of the new interchange with the Florida's Turnpike, a new Advanced Notification package was distributed to the agencies on December 19, 2005. Responses were received from five agencies. No adverse comments were received on the project. *Appendix Q* includes a list of agencies that responded along with their comments and responses to their comments as appropriate.

A Public Alternatives Meeting was held on January 19, 2006. This meeting provided more detailed engineering information and allowed further public input. A Public Hearing was held on May 25, 2006. The preferred alternative was described in a formal presentation. Comments from the public were solicited and recorded by a court reporter. No adverse comments were received regarding the project. All issues identified throughout the public involvement process are discussed in Section 10.0 – Summary of Public Involvement.

#### 8.2.1.7 Utilities and Railroads

All of the utilities in the corridor have been identified and coordination with the utilities companies has been initiated. It is anticipated that utility adjustments will be required. Continued coordination with each of the utility companies will occur throughout the design phase. See Section 7.6 for specific information on utilities present within the project corridor and coordination activities that have occurred.

#### 8.2.2 Cultural Impacts

##### 8.2.2.1 Section 4(f)

No 4(f) resources were identified for this project. The conservation lands associated with the Shingle Creek basin are not identified as recreational lands and are also under private ownership.

##### 8.2.2.2 Historic Sites/Districts and Archeological Sites

A Cultural Resource Assessment, conducted in accordance with the procedures contained in 36CFR Part 800 and including background research and a field survey coordinated with the State Historic Preservation Officer (SHPO), was performed for the project. No archeological or historical sites or properties were identified, nor are any expected to be encountered during subsequent project development. The Federal Highway Administration, after consultation with the SHPO, has determined that no resources listed or eligible for listing on the National Register of Historic Places will be affected.

The SHPO coordination letter is included in *Appendix R*.

### 8.2.2.3 Recreation Areas

No designated recreational areas are present within the project area. The conservation lands associated with the Shingle Creek basin are not identified as recreational lands. No right-of-way will be required from these conservation lands.

## 8.2.3 Natural Environment

### 8.2.3.1 Wetlands

In accordance with Executive Order 11990, Protection of Wetlands, Federal Highway Administration (FHWA) Technical Advisory T6640.8A, and the FDOT PD&E Manual, the extent and types of wetlands in the study area were documented.

Wetlands occurring within the project area were identified and incorporated into this study. Each wetland site was identified in the field using the delineation methods described in the U.S. Army Corps of Engineers (USACOE) “Federal Manual for Identification and Delineation of Wetlands”, dated 1987, and 62-340 F.A.C., “Delineation of the Landward Extent of Wetlands and Surface Waters”. Wetland classifications occurring within the site were determined based on FDOT’s Florida Land Use, Cover and Forms Classifications Systems (FLUCFCS) (January 1999) and the USFWS Cowardin classification method.

Numerous small, isolated palustrine forested wetlands and some freshwater emergent wetlands are present within the entire project area. The larger wetland areas are associated with the Shingle Creek basin. Within the Turnpike right-of-way itself, much of the wetland habitat consists of wetland scrub and freshwater marsh. The wetland investigation identified 11 wetlands and two surface waters associated within the Turnpike interchange study area.

Thirteen different classifications were defined for the wetlands and other surface waters within the Turnpike interchange limits including: (FLUCFCS 510), Wet Ditch/Swale (FLUCFCS 511), Upland-Cut Swale (FLUCFCS 5111), Reservoirs – FLUCFCS 534),

Inland Ponds and Sloughs Mosaic Habitat (FLUCFCS 600), Inland Ponds and Sloughs (FLUCFCS 616 PFO2), Mixed wetland Hardwoods (FLUCFCS 617), Willow (FLUCFCS 618), Hydric Pine (FLUCFCS 625), Slash Pine Swamp Forest (FLUCFCS 627), Wetland Scrub (FLUCFCS 631), Freshwater Marsh (FLUCFCS 641), Herbicide Treated Area (FLUCFCS 6311), and Cleared Areas/under construction (FLUCFCS - 700).

The forested wetlands associated with Shingle Creek are the largest wetland feature within the project area, and are considered high quality wetlands with bald cypress (*Taxodium distichum*) as the dominant wetland vegetation. A few areas other than the forested wetlands associated with Shingle Creek also contain stands of bald cypress and wetland hardwoods such as sweetbay (*Magnolia virginiana*) and swamp bay (*Persea palustris*).

Impacts to wetlands/other surface waters were determined based on the concept plans, preliminary maintenance of traffic and the preliminary drainage concepts. In addition, within project limits the Turnpike is currently under construction. Field reviews conducted in December 2005 revealed that some of the wetlands within the Turnpike right-of-way were being impacted by this construction. Based on available information, these existing impacts were taken into account when calculating impacts. A footprint of impact was developed for each alternative based on a worst-case scenario (i.e., includes potential construction impacts). This footprint was incorporated into the project GIS habitat maps to calculate impacts. Alternatives to avoid/minimize impact to wetlands have been considered. Due to wetlands being present within the existing right-of-way avoidance is not possible. The recommended alternative was selected due to its reduced impact to wetlands. Wetland impacts occur to six wetland/other surface water habitat types. The proposed roadway improvements will impact 17.72 acres of wetlands and 4.9 acres of other surface waters. Wetland impacts associated with stormwater retention areas (ponds) are estimated at 1.31 acres for the Turnpike interchange. The maps illustrating the wetland and surface waters impacts are shown in *Figures 8-1 through 8-2*, respectively.

A summary of impacts to wetlands and other surface waters is shown in *Tables 8-1 and 8-2*. Impacts to wetlands and other surface waters have been minimized to the extent practical. A majority of the impacts occur within roadside swales or other manmade features.

**TABLE 8-1. WETLAND IMPACTS**

<b>FLUCFCS</b>	<b>Description</b>	<b>Revised Alt. 4A (ac)</b>
616	Inland Ponds and Sloughs	0.14
625	Hydric Pine	3.2
631	Wetland Scrub	11.8
641	Freshwater Marsh	2.58
	<b>TOTAL</b>	<b>17.72</b>

**TABLE 8-2. SURFACE WATER IMPACTS**

<b>FLUCFCS</b>	<b>Description</b>	<b>Revised Alt. 4A (ac)</b>
510	Streams and Waterways	0.26
5111	Upland-Cut Swale	4.64
	<b>TOTAL</b>	<b>4.9</b>

Mitigation for approximate impacts of 17.72 acres of wetlands for the Turnpike interchange is anticipated. In addition, the USACE may claim jurisdiction to some of the other surface waters described as streams and waterways (FLUCFCS 510) thus requiring an additional 0.26 acres of mitigation. Mitigation is not anticipated for impacts to upland-cut swale surface waters (FLUCFCS 5111) as these are part of an existing drainage system.

Wetland impacts are proposed to be mitigated pursuant to Section 373.4137 Florida Statutes (F.S.). The cost per mitigation acre for the Funding Year 2006/2007 is \$92,444. According to this cost rate, mitigation for impacts to wetlands along the Turnpike will be \$1,638,108. Mitigation for impacts to other surface waters is \$24,035. The maximum cost for mitigation is \$1,662,143.

Mitigation will be provided for any unavoidable wetland impacts. Wetland impacts will be mitigated pursuant §373.4137, (F.S. Senate Bill 1986) to satisfy all mitigation requirements of Part IV, Chapter 375, F.S. and 33 U.S.C.S. 1344.

A Wetland Evaluation Report has been prepared and is on file at the Florida's Turnpike Enterprise office. A copy is provided on CD at the end of this report.

#### 8.2.3.2 Water Quality

A Water Quality Impact Evaluation (WQIE) was conducted for the project in order to comply with the Clean Water Act (surface water impacts) and the Safe Drinking Water Act (ground water impacts). A WQIE checklist is included in *Appendix K*.

#### 8.2.3.3 Floodplains

The Federal Emergency Management Agency (FEMA) maps for Orange County, Florida, were used to identify potential flooding and floodway encroachments associated with this project. According to the FEMA maps, the project flood prone areas are primarily located within Zone 'AE'. Zone 'AE' designates areas subject to flooding where a 100-year or base flood elevation has been determined by the Flood Insurance Study and is indicated on the FIRM panels. Zone 'AH' designates areas subject to flooding where a 100-year or base flood elevation has been determined but is determined in term of a flood depth of one to three feet, usually areas of ponding, by the Flood Insurance Study and indicated on the FIRM panels. These areas are affected by 100-year flood events and are discussed below.

One floodplain area is a small flood prone area north of Sand Lake Road east of the Florida Turnpike (SR 91) and west of Presidents Drive. This area is designated Zone 'AH' and has a floodplain elevation of 92.0 NGVD according to the Flood Insurance Study. The floodplain impact anticipated is minimal due to the minimum impact by the proposed northbound on-ramp to the Turnpike. No indications or comments have evidenced any flooding at this location.



The second area is within the Shingle Creek regulated floodway which is the area north of Sand Lake Road and continues north along the Turnpike to the Shingle Creek Bridge at MP 258.164. The area is designated Zone 'AE' with an elevation of 89.00 NGVD north of Sand Lake Road. The floodplain includes Sand Lake Road from west of Kingspointe Parkway to halfway between John Young Parkway (CR 423) and the Florida Turnpike (SR 91) and extends to the east-northeast side of the Turnpike. The area immediately around Shingle Creek is within a regulated floodway. No indications or comments have evidenced any flooding at this location.

The proposed alignment transversely encroaches on the floodplain along the eastern and western edges of the proposed interchange in two locations. The proposed northbound on-ramp to the Turnpike encroaches on the floodplain Zone 'AH' but appears that the floodplain area has not experienced any flooding since the overpass was built in the late 1970's. The second area where the proposed interchange transversely encroaches on the floodplain is at Shingle Creek. A floodplain compensation pond, currently under construction with the Turnpike widening, will be impacted by the loop on-ramp and southbound off-ramp. Retaining walls are proposed in the vicinity of the floodplain compensation pond to reduce floodplain impacts by the proposed ramps. The stormwater management facilities proposed with the recommended interchange alternative and the expansion of the floodplain compensation pond will offset the floodplain impacts and the impacts to the compensation pond which is currently being constructed.

#### 8.2.3.4 Coastal Zone Consistency

The Florida Department of Environmental Protection has determined that this project is consistent with the Coastal Zone Management Plan (FDEP letter dated February 21, 2006).

#### 8.2.3.5 Wildlife and Habitat

Wildlife habitats occurring along the project corridor include both wetland and upland communities. Many of these areas have been impacted by exotic vegetation and overgrowth. The Wetland communities were discussed in *Section 8.3.3.1*. The majority of

the upland habitats found within the study area consist of remnant pine flatwoods areas. A list of the dominant upland vegetative communities within the project limits includes Pine Flatwoods (FLUCFCS 411), Upland Scrub, Pine and Hardwoods (FLUCFCS 436), Disturbed Upland Scrub, Pine and Hardwoods (FLUCFCS 4361), Mixed Hardwoods (FLUCFCS 438), and Planted Pine (FLUCFCS 4411).

Pursuant to Segment 7(c) of the Endangered Species Act of 1973, the project corridor was evaluated for the potential occurrence of threatened and endangered species. Based on a review of literature, coordination with environmental agencies, and subsequent field reconnaissance, it was determined that state and federally listed (endangered, threatened, and species of special concern) species may potentially occur within the project corridor. The Endangered Species Biological Assessment is provided on CD. Listed species that may occur within the project area are identified in *Table 8-3*. No federally designated critical habitat exists within the project area. Thus, no critical habitat will be impacted. No Essential Fish Habitat (EFH) will be impacted by the proposed project. Maps showing impacts to habitats are shown in *Figures 8-1 and 8-2*.

**TABLE 8-3. FEDERAL AND STATE LISTED SPECIES POTENTIALLY PRESENT WITHIN PROJECT AREA**

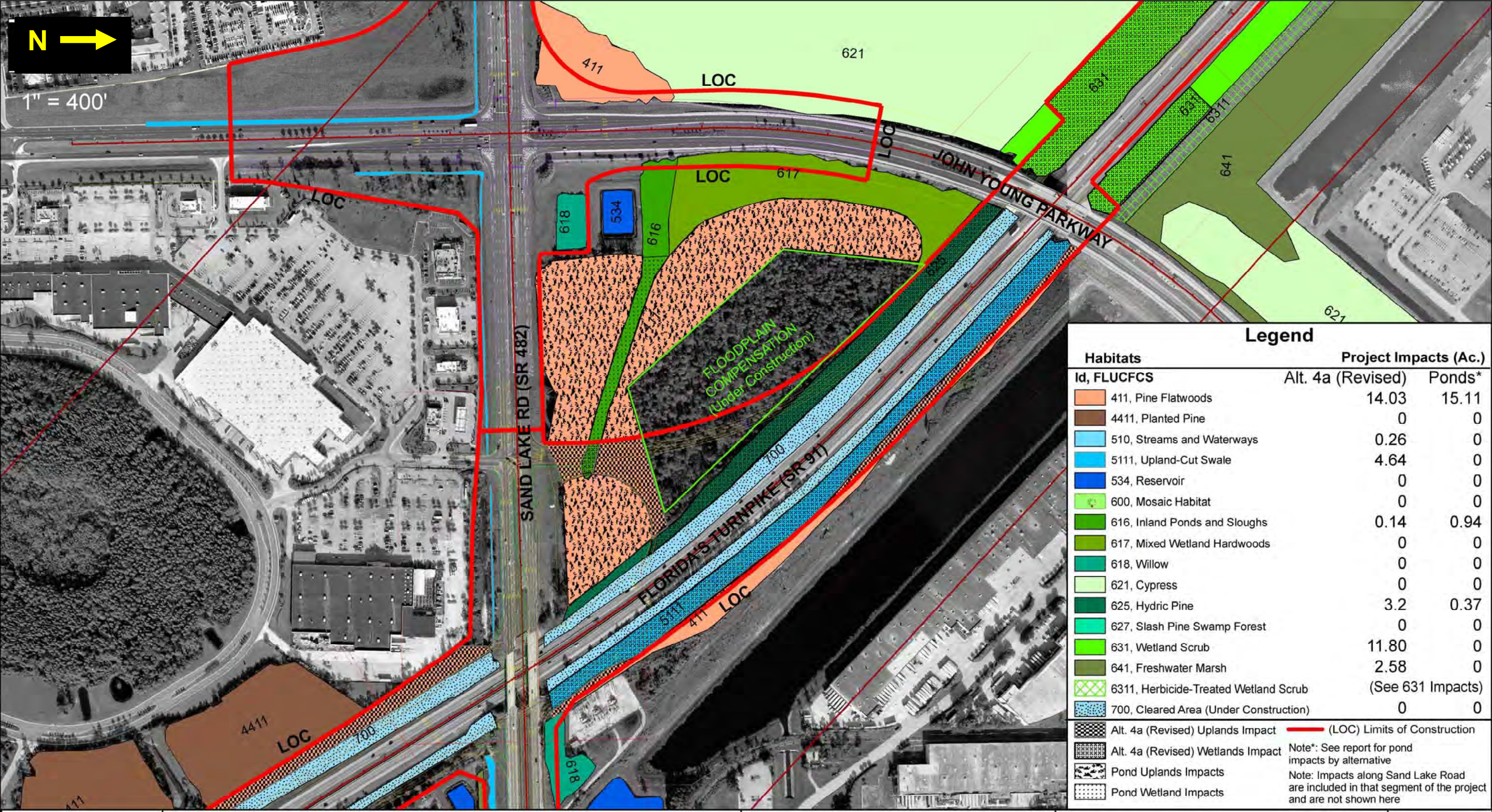
Category	Common Name	Scientific Name	Federal Status	State Status	Occurrence Potential
<b>Mammals</b>	Florida Mouse	<i>Podomys floridanus</i>	N	SSC	Moderate
	Sherman's Fox Squirrel	<i>Sciurus niger shermani</i>	N	SSC	Moderate
<b>Birds</b>	Bald Eagle	<i>Haliaeetusleucocephalus</i>	T	T	Low
	Wood Stork	<i>Mycteria americana</i>	E	E	High
	Red-cockaded Woodpecker	<i>Picoides borealis</i>	E	SSC	Low
	Limpkin	<i>Aramus guarauna</i>	N	SSC	Moderate
	Snowy Egret	<i>Egretta thula</i>	N	SSC	Moderate
	Little Blue Heron	<i>Egretta caerulea</i>	N	SSC	Moderate
	Tricolored Heron	<i>Egretta tricolor</i>	N	SSC	High
	White Ibis	<i>Eudocimus albus</i>	N	SSC	Moderate
	Southeastern American Kestrel	<i>Falco sparverius paulus</i>	N	T	Moderate
	Florida Sandhill Crane	<i>Grus canadensis pratensis</i>	N	T	Moderate
	American Alligator	<i>Alligator mississippiensis</i>	T (S/A)	SSC	High
<b>Reptiles</b>	Eastern Indigo Snake	<i>Drymarchon corais couperi</i>	T	T	Moderate
	Sand Skink	<i>Neoseps reynoldsi</i>	T	T	Low
	Gopher Tortoise	<i>Gopherus polyphemus</i>	N	SSC	Low
	Florida Pine Snake	<i>Pituophis melanoleucas mugitus</i>	N	SSC	Low
	Short-tailed Snake	<i>Stilosoma extenuatum</i>	N	T	Low
<b>Amphibians</b>	Florida Gopher Frog	<i>Rana capito</i>	N	SSC	Low

Source: USFWS, FFWCC

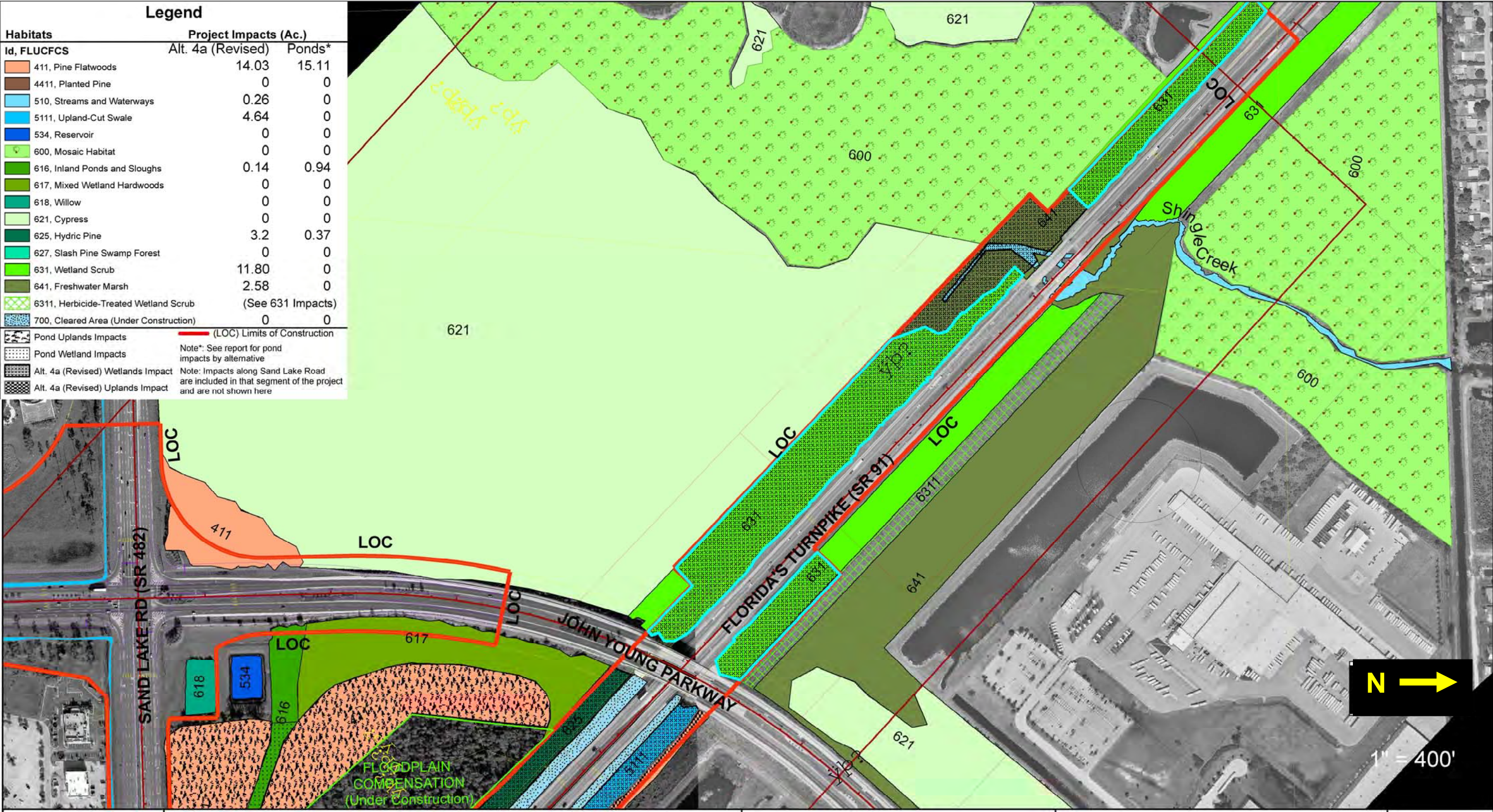
SSC = Species of special concern; T = Threatened; E = Endangered; N = Not Listed

T (S/A) = Threatened due to Similarity of Occurrence











Strategic Habitat Conservation Areas (SHCA) are present within the study area. However, review of the FWC database reveals that SHCA are located outside the limits of this project. No impacts to these areas are anticipated due to project implementation.

Priority Wetlands Habitat has also been identified by Florida Fish and Wildlife Conservation Commission (FWC) as being present within the project area. These areas are associated with the wetland forests of Shingle Creek. With the exception of replacing the existing bridges on Sand Lake Road with new bridges over Shingle Creek along the same alignment and the potential minor widening of the bridges over Florida's Turnpike, no impacts to these areas are anticipated due to project implementation.

Minor impacts to the natural communities present along the project corridor are anticipated. These impacts will occur along the fringes of the habitat due to the widening of the roadway. No impact to existing conservation areas (mitigation in Shingle Creek for Universal Studios) is anticipated with implementation of the recommended alternative. Permanent habitat impacts are presented in *Table 4-4*

Provided below is a brief description of each listed species that may occur within the project area. An \* indicates that the species is federally listed.

#### Florida Mouse (*Peromyscus floridanus*)

The Florida mouse is state-listed as a species of special concern. This species can be found in xeric upland communities with sandy soils, including scrub, sandhill, and ruderal sites where they can inhabit burrows of the gopher tortoise (*Gopherus polyphemus*). Marginal habitat is present for this species and no impact to potential habitat will occur. As such, this species will not be affected by habitat loss due to project activities.

#### Sherman's Fox Squirrel (*Sciurus niger shermani*)

Sherman's fox squirrel is state-listed as a species of special concern. This large tree squirrel inhabits pine flatwoods, pastures and other open, ruderal habitats with scattered

oaks and pines. No specimens of Sherman's fox squirrel were observed during the field reviews and no recorded observances of this species were found. However, appropriate habitat for this species exists within the project area; and impact to pine flatwood habitats will occur due to construction of ponds. The ponds have typically been located in forested areas that have already been disturbed or in forested areas adjacent to existing construction (floodplain compensation pond located along the Turnpike, immediately north of Sand Lake Road). In addition, the proposed project will not impact the largest remaining pine flatwood area located within the project area. Therefore, it is anticipated that no adverse affect to this species will occur.

Bald Eagle (*Haliaeetus leucocephalus*)\*

The bald eagle is both state and federally listed as a threatened species. It is found throughout the State of Florida and most commonly inhabits coastal areas, bays, rivers, lakes, or other bodies of water that provide concentrations of food sources. There have been visual occurrences of bald eagles in the project area (fly-overs). However, the project is located in an area surrounded by urban development and suitable nesting and foraging habitat for this species is extremely limited. A review of bald eagle occurrences and nesting locations within and around the project area was conducted with the FFWCC as well as a thorough literature review. Based on the latest available data from FFWCC on bald eagle nests, the closest nest is approximately three and a half (3.5) miles northeast of the projects, on Lake Conway. Therefore, no affect to this species will occur due to project activities.

Wood Stork (*Mycteria americana*)\*

The wood stork is both a state and federally listed endangered species. Wood storks inhabit freshwater and brackish wetlands, primarily nesting in cypress and mangrove swamps. They can be found foraging in shallow water in freshwater marshes, narrow tidal creeks and flooded tidal pools as well as roadside ditches and pasture lands. According to the FFWCC database, one wood stork colony lies within 18.6 miles of the project area (Core Foraging Area (CFA) for the species). The FNAI database also reports that portions of the project area are located on or near potential habitat for the wood

stork. In addition, field reviews confirmed that potential foraging habitat is present within the project corridor. Multiple wood storks were observed foraging in the wet prairie habitat adjacent to the Turnpike. The proposed project will not adversely affect the wood stork due to minimal impacts to foraging habitat and required wetland mitigation will occur within the CFA.

Red-Cockaded Woodpecker (*Picoides borealis*)\*

This species is federally listed as endangered, and state-listed as a species of special concern. It inhabits open, mature pine woodlands that have a diversity of grass, forb, and shrub species. The Orange County EPD and the USFWS had no records of RCW in the project area and found it to be an “unlikely” nesting and foraging area for the species which prefers old-growth pine species, particularly longleaf pine (Liz Johnson, Environmental Supervisor Orange County EPD, 2006 and FFWCC, Management Plan for Red-Cockaded Woodpecker, 2003). FFWCC did have records of the RCW in several Orange County locations, but no historical or current records show the RCW within the project area. The closest known RCW occurrences are 5-6 miles southwest and 10-11 miles east of the project section (Robin Boughton, Avian Coordinator, FFWCC, 2006). Based on field reviews, no old growth forest is present within the project area. In addition, field surveys did not find any occurrences of red-cockaded woodpeckers and there are no documented occurrences of this species. Therefore, no affect to this species is anticipated with project activities.

Limpkin (*Aramus guarauna*)

Limpkins are state-listed as a species of special concern. They inhabit fresh and salt water wetland habitats, as well marginal areas around both natural and man-made ponds, lakes, rivers, swales and sloughs in south Florida. They have a wide range of nesting sites, including mounds of aquatic vegetation and marsh grasses, among cypress knees, and high in trees. According to the FNAI database, limpkins have been historically found near the project area, and appropriate habitat for the limpkin exists within the project corridor. The drainage pond areas, wet swales, and drainage ditches in or adjacent to the project study area may provide foraging habitat for this species. The project will not



significantly reduce available habitat for these species, therefore, the limpkin will not be adversely affected by project activities.

Snowy Egret (*Egretta thula*), Little Blue Heron (*Egretta caerulea*), Tri-colored Heron (*Egretta tricolor*), White Ibis (*Eudocimus albus*)

None of these wading birds is federally listed; however, each is listed by the state as a species of special concern. These wading birds are found throughout the state in saltmarshes, mangroves, wet prairies and freshwater marshes. Although the drainage pond areas, wet swales, and drainage ditches in or adjacent to the project study area may provide foraging habitat for all four of these species; the project will not significantly reduce available habitat for these species. Therefore, these species will not be adversely affected by project activities.

Southeastern American Kestrel (*Falco sparverius paulus*)

Southeastern American kestrels are State listed as threatened (excludes northern migrants). Kestrels can be found in open pine habitats, woodland edges, prairies, and pastures throughout much of Florida. Sandhill habitats seem to be preferred, but this species may also occur in flatwoods settings. This species has been reported in southern Orange County and suitable habitat for this species is present in the project vicinity; however, it is limited. No impact to potential foraging habitat will occur. Therefore, no impact to this species is anticipated.

Florida Sandhill Crane (*Grus canadensis pratensis*)

This species is considered threatened by the State of Florida. It inhabits prairies, freshwater marshes, and pasture lands. This species has been reported near the project area, and the FNAI database has identified portions of the project area as located on or near potential habitat for the sandhill crane. Although the drainage pond areas, wet swales, and drainage ditches in or adjacent to the project study area may provide foraging habitat for this species, the project will not significantly reduce available habitat for this species. Therefore, this species will not be adversely affected by project activities.

American Alligator (*Alligator mississippiensis*)\*

The American alligator is state-listed as species of special concern. They are federally listed as threatened due to similarity of appearance where their habitat overlaps that of the American crocodile, (*Crocodylus acutus*). The alligator typically inhabits freshwater marshes and lakes, while the crocodile prefers saltwater habitats. The proposed project area contains freshwater habitat, and a single American alligator was observed within the project area during the field reviews. Sufficient habitat for the alligator will remain. As such, this species will not be adversely affected by project activities.

Eastern Indigo Snake (*Drymarchon corais couperi*)\*

The eastern indigo snake is listed as threatened by both the USFWS and the FFWCC. These snakes need relatively large areas of undeveloped land, as roads continue to fragment habitats, eastern indigo snakes will be increasingly vulnerable to highway mortality as they travel through their large territories. The preferred Florida habitat includes dry glade areas, tropical hammocks, muckland fields, and some flatwoods areas. It will also utilize disturbed areas as well as urban habitats. Roadside berms and swales may be potential habitat. It is a common commensal of gopher tortoise burrows.

No eastern indigo snakes were observed within the project corridor. However, potential habitat does exist within the project area. The Standard Protection Measures for the eastern indigo snake will be incorporated during the design and construction phases. Therefore, no adverse affect to this species is anticipated, if these measures are implemented.

Sand Skink (*Neoseps reynoldsi*)\*

The sand skink is both state and federally listed as threatened. Its range is limited to the central counties of the state, and it principally inhabits rosemary scrub, but also sand pine and oak scrubs, scrubby flatwoods, turkey oak ridges within scrub, and even along edges of citrus groves occupying former scrub. The skink requires loose sand (for burrowing) with large patches of sparse to no groundcover or canopy. A limited area of habitat for this species, overgrown scrub, occurs within the project area due to overgrowth of the

scrub habitat. Although they are difficult to observe, none were documented during field surveys. The proposed road and pond improvements will not impact potential habitat; therefore, this species will not be adversely affected by project activities.

#### Gopher Tortoise (*Gopherus polyphemus*)

The gopher tortoise is a state-listed species of special concern. Vegetation communities where gopher tortoises are found include longleaf pine sandhills, xeric oak hammocks, scrub, pine flatwoods, dry prairies, and coastal dunes. Gopher tortoises can also live in man-made environments, such as pastures, old fields, railroad beds, and grassy roadsides. Habitat for the gopher tortoise within the project area is marginal due to significant overgrowth of the scrub areas. The proposed road and pond improvements will not impact potential gopher tortoise habitat. Therefore, this species will not be adversely affected by project activities.

#### Florida Pine Snake (*Pituophis melanoleucas mugitus*)

The Florida pine snake is state-listed as a species of special concern and occurs throughout the majority of the state. It inhabits relatively open canopies and dry sandy soils, in which it burrows. It prefers sandhill and former sandhill communities, including old fields and pastures, but also sand pine scrub and scrubby flatwoods. It often coexists with pocket gophers and gopher tortoises. Habitat for this species is present within the project area. However, the proposed road and pond improvements will not impact potential habitat; therefore, this species will not be affected by project activities.

#### Short-tailed Snake (*Stilosoma extenuatum*)

This species is state-listed as threatened. It inhabits dry upland habitats, primarily sandhill, xeric hammock and sand pine-scrub communities. The proposed road and pond improvements will not impact potential short-tailed snake habitat. Therefore, this species will not be adversely affected by project activities.

### Gopher Frog (*Rana capito*)

The gopher frog is a state-listed species of special concern. It lives in dry, sandy uplands, chiefly sandhill and scrub habitat that include isolated wetlands or large ponds within about one mile. The gopher frog is nocturnal, and is often a commensal of gopher tortoise burrows. No gopher frogs were observed during the field reviews of the project area, although marginal habitat for the species is present in the project area. The proposed road and pond improvements will not impact potential habitat; therefore, this species will not be affected by project activities.

#### 8.2.3.6 Rare Plant Habitat

The FNAI database also listed the project area as having potential habitat for rare plants, including Florida bonamia (*Bonamia grandiflora*, federal-T, state-E), which was identified as having potential habitat within the project area. No Florida bonamia were observed during field surveys, although an occurrence has been documented northeast of the project area. Other listed plant species documented near the project area include nodding pinweed (*Lechea cernua*, state-T) and paper-like nailwort (*Paronychia chartacea* ssp. *Chartacea*, federal-T, state-E). None of these species were observed in the project area.

### Bats

At least five species of bats use highway bridges in Florida as roosting sites including free-tailed bats (*Tadarida brasiliensis*), southeastern myotis (*Myotis austroriparius*), big brown bats (*Eptesicus fuscus*), evening bats (*Nycticeius humeralis*), and Rafinesque's big-eared bat (*Corynorhinus rafinesquii*). None of the bat species are listed as endangered, threatened or of special concern, giving them no federal regulatory protection in Florida. There are, however, FWC rules concerning bat roosts in bridges as listed in Chapter 68A-4.001: Section 1 of the Florida Administrative Code (FAC) which states that no roosts shall be disturbed, and Section 2 of the FAC states that the use of toxic chemicals to destroy bats or drive them from their nesting sites is prohibited.

- Sand Lake Road WB over the Turnpike (750294) – currently being widened

- Sand Lake Road EB over the Turnpike (750568) – replacement bridge under construction
- Sand Lake Road over the Turnpike (750294)
- John Young Pkwy NB over Turnpike (754098)
- John Young Pkwy SB over Turnpike (754097)

The first two bridges are either being widened or replaced. There have been no reported occurrences of bats at the last three bridges. These bridges are not slated for replacement. However, prior to construction activities, it is recommended that a preconstruction survey be conducted to determine the presence of bats at each of the bridges. Based on adherences to these recommendations, no impact to any species of bats is anticipated.

The results of the Endangered Species Biological Assessment indicate that adverse impacts to protected species are not anticipated as a result of the proposed project. Seven federally listed species were evaluated to determine if the proposed project will affect these species.

Federally listed species which may potentially be impacted by the proposed project include the wood stork and eastern indigo snake. Minor impacts to wood stork foraging habitat may occur as a result of filling in portions of the drainage ditches and swales. However, because these impacts are relatively minor and any required wetland mitigation will occur within the CFA, the wood stork will not be adversely affected by project implementation. The eastern indigo snake was not directly observed during field surveys. However, suitable habitat for this species exists within the study area. In order to avoid adverse impacts during construction activities, protective guidelines will be implemented. These guidelines have been highly effective on previous roadway projects and will assure that the project will not adversely affect this species. Minor impacts to alligator habitat may occur, however sufficient habitat will remain within the conservation areas of the Shingle Creek basin. Therefore no adverse effect to this species will occur.

No affect to the Florida scrub jay, bald eagle, red-cockaded woodpecker or sand skink is anticipated due to the lack of available habitat for these species within the project limits, lack of any indications of their presence during the field surveys, and/or specific information which document their absence from the project area.

Eleven additional state listed species were evaluated to determine if the proposed project will affect these species. The pine flatwoods and upland scrub areas provide marginal habitat for the gopher tortoise and any commensal species (such as the gopher frog and Florida mouse). Impacts to gopher tortoise habitat are not anticipated. Therefore, no impact to gopher tortoises or any commensal species is anticipated. Six state listed avian species, including the little blue heron, snowy egret, tricolored heron, limpkin, sandhill crane, and the white ibis, may be affected due to the direct impact of fill in drainage ditches and swales. However, it is anticipated that this project is not likely to adversely affect these species since the majority of habitat within the project area will remain. It is not anticipated that this project will impact another state listed avian species, the Southeastern American kestrel, due to lack of foraging habitat and potential breeding sites along the project corridor.

The construction contractor, in accordance with the Florida Department of Transportation's Standard Specifications for Road and Bridge Construction 2007, will comply with "Article 7-1.4 Compliance with the Federal Endangered Species Act". In so doing, the contractor will notify the FDOT Environmental Management Office of any off-site related activities in relation to the proposed project, including, but not limited to staging areas, borrow pits, loading areas and any other off-site activity that has not received prior biological clearance. Any chance encounters with state or federally listed species will be handled according to the protocol set forth, and enforced, by FFWCC and/or USFWS.

In conclusion, impact to habitats that support listed wildlife species will be minimized to the greatest extent possible. Because only portions of these habitats will be impacted by the project, suitable habitat will remain following construction particularly associated

with the conservation lands of the Shingle Creek basin, and mitigation will be provided as required. No long-term impacts to regional populations of any listed species are expected to occur based on the proposed project.

An Endangered Species Biological Assessment has been prepared and is on file at the FDOT District 5 office. A copy is provided on CD at the end of this report. The USFWS concurrence correspondence can be found in *Appendix L*.

#### 8.2.4 Physical Impacts

##### 8.2.4.1 Noise

A desk top review was conducted to determine if noise sensitive sites were present within the project area. No noise sensitive sites were located in close proximity of Sand Lake Road or the new Turnpike Interchange. Therefore, due to the absence of noise sensitive receivers within the study limits, it is expected that traffic noise associated with this project study would produce no impacts.

##### 8.2.4.2 Air

An Air Quality Screening Analysis was undertaken for the combined Sand Lake Road widening/Turnpike interchange project. The results of the air screening analysis are presented in *Table 8-4*. In all cases, the project is not expected to exceed the NAAQS maximum CO levels of 35 ppm for the One-Hour and 9 ppm for the Eight-Hour. Thus, the project passes the CO screening analysis, and significant air quality impacts due to the proposed project are not expected.

**TABLE 8-4. CO FL 2004 RESULTS DATA SUMMARY**

YEAR	DESIGN HOUR TRAFFIC VOLUME - WORST-CASE LINK	SPEED (MPH)	PREDICTED CO CONCENTRATION		NAAQS MAX. CO CONCENTRATION	
			1-HR ppm	8-HR ppm	1-HR ppm	8-HR ppm
<b>2005 Existing</b>	2620	45	12.3	7.4	35	9
<b>2010 Build</b>	3230	45	11.6	7.0	35	9
<b>2020 Mid- Design</b>	4010	45	10.3	6.2	35	9
<b>2030 Design</b>	4440	45	10.3	6.2	35	9

#### 8.2.4.3 Construction

Construction activities for the proposed project will have air, noise, water quality, visual and minor traffic flow impacts for those residents and travelers within the immediate vicinity of the project.

Construction activities will cause minor short-term air quality impacts in the form of dust from earthwork and unpaved roads, and diesel-powered construction equipment. Air pollution associated with the creation of airborne particulates will be effectively controlled through the use of watering or the application of other controlled materials in accordance with FDOT's *Standard Specifications for Road and Bridge Construction* as directed by the FDOT Project Engineer.

Noise and vibrations impacts will be from heavy equipment movement and construction activities such as vibratory compaction of roadway and embankments. Noise control measures will include those contained in FDOT's *Standard Specifications for Road and Bridge Construction* in addition to those recommended in the Noise Impact section of this document. Adherence to local construction noise and/or construction vibration ordinances by the contractor will also be required where applicable.



Water quality impacts resulting from erosion and sedimentation will be controlled in accordance with FDOT's *Standard Specifications for Road and Bridge Construction* and through the use of Best Management Practices.

Maintenance of traffic and sequence of construction will be planned and scheduled so as to minimize traffic delays throughout the project. Signs will be used as appropriate to provide notice of road closures and other pertinent information to the traveling public. The local news media will be notified in advance of road closings and other construction-related activities which could excessively inconvenience the community so that motorists, residents, and business persons can plan travel routes in advance.

A sign providing the name, address, and telephone of the Department contact person will be displayed onsite to assist the public in obtaining immediate answers to questions and logging complaints about project activity.

Access to all businesses and residences will be maintained to the extent practical through controlled construction scheduling. Traffic delays may occur, and will be controlled to the extent possible where many construction operations are in progress at the same time. The contractor will be required to comply with the Best Management Practices of FDOT.

For the residents living within the project area, some of the materials stored for the project may be displeasing visually; however, this is a temporary condition and should pose no substantial problem in the short term.

Construction of the roadway requires excavation of unsuitable material (muck), placement of roadway fill, and use of materials, such as limerock, asphaltic concrete, and portland cement concrete. Demucking is anticipated at most of the wetland sites and will be controlled by *Section 120 of the FDOT Standard Specifications*. Disposal will be on-site in detention areas or off-site. The contractor is responsible for his methods of controlling materials from the project. Temporary erosion control features as specified in the FDOT's Standard Specifications, Section 104, will consist of temporary grassing,

sodding, mulching, sandbagging, slope drains, sediment basins, sediment checks, artificial coverings, and berms.

#### 8.2.4.4 Contamination

A Contamination Screening Evaluation Report (CSER) was conducted to evaluate the risk of encountering petroleum or hazardous substance contamination of soil or groundwater in the vicinity of the proposed alignments that could affect right-of-way acquisition or roadway construction of both Sand Lake Road and the Turnpike interchange. A total of 26 parcels were identified along the project corridor with risk evaluation ratings ranging from No Risk to High Risk. The Risk Rating System used was developed by the FDOT (Chapter 22 FDOT PD&E guidelines) and can generally be defined as the following categories: “no”, “low”, “medium” and “high” risk.

Contamination sites associated with the Turnpike interchange include the Hess Gas Station located at 2902 Sand Lake Road and the Lowes located at 2800 Sand Lake Road, both rated as ‘Low’ These two sites are dually associated with the Sand Lake Road project.

The proposed project contains no known significant contamination.

## **9.0 PERMITS AND MITIGATION**

### **9.1 Permits Required and Coordination Needed**

Agency coordination to obtain information on wetland habitats within the project area has occurred through the Advanced Notification process and individual conversations with staff at FWS, FWC and Orange County Environmental Protection Division (EPD), and the South Florida Water Management District (SFWMD). The Advanced Notification (AN) package was originally sent to local, state and federal agencies on July 11, 2005. Due to the addition of the Turnpike interchange to this project an updated AN package was distributed on December 15, 2005. Responses to the original Sand Lake Road project have been received from FDEP, SFWMD, NMFS, FWC and Orange County EPD. SFWMD stated that the project would require an Environmental Resource Permit, and that all wetlands within the project area should be identified, including those that will be impacted. NMFS stated that the proposed project would not impact areas that support NMFS trust resources. Orange County EPD recommended that wetland mitigation should occur within the Shingle Creek Hydrologic Basin. FDEP and FWC had no comments. The only responses received for the updated AN are from the FWS and Orange County EPD. The FWS stated that wetland impacts should be minimized and mitigation should occur within the same watershed basin. Orange County stated that their comments did not change from the original review of the project. Additional coordination with permit and permit review agencies will occur as design details are finalized.

It is anticipated that the following permits will be required for this project:

- USACE Segment 404 Dredge and Fill Permit
- SFWMD Environmental Resource Permit
- FDEP National Pollutant Discharge Elimination System General Permit

## **9.2 Mitigation Expected**

Mitigation for approximate impacts of up to approximately 17.72 acres of wetlands and 0.26 acre for other surface waters (Shingle Creek) for the Turnpike interchange is anticipated. Mitigation is not anticipated for impacts to 'other' surface waters (FLUCFCS 5111) as these areas are part of an existing drainage system and are considered upland-cut ditches. Mitigation requirements for the Turnpike interchange may be up to 17.98 acres.

## 10.0 SUMMARY OF PUBLIC INVOLVEMENT

A Public Involvement Program (PIP) was conducted for this project in order to obtain comments/input from the public, government officials, and agencies. The major elements of this program consist of an Advanced Notification (AN) package, Public and Agency Kickoff Meetings, a Public and Agency Alternatives Meetings, several individual meetings with key stakeholders, and a public hearing. Comment forms were handed out at the public meetings and feedback was solicited.

In an effort to reach out to the community, solicit feedback, and notify citizens of upcoming meetings, the FDOT sent direct mailings to property owners, renters, and tenants within 300 feet of the study corridor. In addition, direct mailings were sent to property owners, renters, and tenants along side streets where improvements are proposed. Invitations were hand delivered in select areas of potential impact. News releases to newspapers, radio, and TV stations were made to inform the public of meetings.

No public comments have been received. Coordination has occurred with Orange County. Orange County has required the following:

- Turnpike interchange should not conflict with single point interchange planned at Sand Lake Road and John Young Parkway.
- John Young Parkway level of service should not be substantially degraded by addition of signalized intersections on John Young Parkway.

The recommended alternative is consistent with these objectives.

A public hearing was held on May 25, 2006. Comments submitted as a part of the official Public Hearing record will be included in the Public Hearing Transcript and Summary and are contained in *Appendix M*.

# **APPENDIX A – TEAM MEETING MINUTES**



Kimley-Horn  
and Associates, Inc.

■  
3660 Maguire Boulevard  
Suite 200  
Orlando, FL 32803  
Tel. 407 898-1511  
Fax 407 894-4791

## ***MEETING NOTES***

**Subject:** SR 482 (Sand Lake Road) PD&E Study

**Purpose:** Team Meeting

**Location:** FDOT District Five, Volusia Conference Room

**Date/Time:** February 27, 2006, 10:00 a.m.

**Attendees:** Raul Artuz – FDOT Structures  
Amir Asgarinik – FDOT Consultant Project Management  
Ed Barfield – FDOT Right-of-Way/Legal  
Gary Bass – FDOT Utilities/Value Engineering  
Richard Bell – FDOT Production Support  
George Borchik – FDOT Roadway Design  
Anne Brewer – FDOT Environmental Management  
Don Budnovich – FDOT Orlando Construction  
Lance Decuir – FDOT Environmental Management  
Bob Gleason – FDOT Environmental Management  
John Hatfield – FDOT Orlando Maintenance  
Michael Hill – FDOT Drainage Design/Permits  
Jonathan Linforth – FDOT Production Support  
Bill Marchese – FDOT Cost Estimates  
Rob McDaniel – FDOT Surveying and Mapping  
Pat Muench – FDOT Drainage Design  
Tom Percival – FDOT Environmental Management  
Doris Salyerds – FDOT Transportation Development  
Shad Smith – FDOT Consultant Project Management  
Stephen Tonjes – FDOT Environmental Management  
Mike Van Der Heyden – Florida's Turnpike EMO  
Jose Hernandez – Orange County Utilities  
Pete Sushinsky – Parsons Brinckerhoff  
Kim Elmer – Kimley-Horn  
Steve Godfrey – Kimley-Horn  
Herman Tirado – Kimley-Horn  
Marianne Wood – Kimley-Horn  
Jan Everett – URS  
Mike Waddell – URS  
Al Bowlin – Water Conserv II  
Victor Palulis – Progress Energy  
Vinnie LaVallette – TBE Group

## **1. Introduction**

- The purpose of this meeting was to review the preferred alternative for the SR 482 PD&E Study and answer questions related to each discipline of the project. The discussion is outlined below.
- Invitees and team members introduced themselves; a sign in sheet was passed around.

## **2. Description of Project**

- The limits of the project are from 1,600 feet west of Turkey Lake Road to Presidents Drive. The study also includes sidestreet improvements to Turkey Lake Road, International Drive, Universal Boulevard, and Presidents Drive. An interchange at John Young Parkway and/or Sand Lake Road with Florida's Turnpike is also being addressed as a part of this study.

## **3. Schedule – Design and Following Phases**

- Doris Salyerds confirmed that design is scheduled for execution in January 2007.
- Steve Godfrey stated that a large part of right-of-way acquisition is funded.
- An inquiry was made regarding how many design projects this would be. Doris Salyerds replied that there would only be one FDOT design project. The limits are from Turkey Lake Road to Presidents Drive.

## **4. PD&E Study**

- An inquiry was made regarding Joint Project Agreements (JPAs). Steve replied that funding agreements are currently being negotiated and Secretary Gilhooley is involved in this process.
- The current LRE estimates the cost of the project to be \$78 million.

## **5. Drainage/Pond Siting**

- Orange County does not support exfiltration. Tom Percival stated that the Department will not eliminate exfiltration if it is the only feasible option.
- Steve Godfrey stated that exfiltration may need to be considered for Basin 2.
- Pat Muench stated that it is important to the Department that this project be proactive with the community and address flooding issues.



## 6. Environmental Services/Permitting

- 14.8 acres of wetlands and other surface waters and 23.1 acres of habitat will be potentially impacted by this project.
- A scrub jay survey was conducted and no evidence of scrub jays was found.
- An inquiry regarding the bats under the Shingle Creek bridge and the Kirkman interchange bridge was raised. Steve replied that while there were reports of the bats being there, no evidence was found during field reviews. This will be readdressed during construction. *(This note is added for clarification. Since there were previous sightings reported by FDOT at the Kirkman bridges, only limited visual observations were made; a detailed study was not undertaken at this location; The Shingle Creek bridges were reviewed in detail and few roosting crevices are available. Bats were not observed. Detailed studies will be proposed just before construction).*

## 7. Contamination

- The project contains nine medium risk sites and two high risk contamination sites.

## 8. Geotechnical

- There are no geotechnical issues.

## 9. Design and Right-of-Way Survey

- An inquiry was made as to whether the project would require any design variances. Steve Godfrey stated that the Kirkman bridge clearance is a design variance.
- Steve Godfrey stated that the Sand Lake Road/Turkey Lake Road improvements provide two extra feet for a retaining wall.

## 10. Structures

- A design build package is being developed for the Shingle Creek Bridge.
- Vertical clearances at Kirkman Road will require a design variance.

## 11. Utility Issues

- Jose Hernandez stated that Orange County would like to enter into a JPA with FDOT to replace the existing force main from the treatment plant west to 42". The cost of this undertaking is estimated at \$10 million.

- Jose also stated that the cost to relocate the lift station on International Drive is estimated at \$1.5 million, which would be an added project cost. A site for relocation of the lift station needs to be identified. Jose stated that Orange County would like to combine this lift station with the existing pump station on Canada Drive.
- If the lift station is moved, all gravity lines will need to be adjusted.
- An inquiry was made as to why the cost to relocate the lift station is so high. Jose stated that this is the cost to relocate per Orange County standards and that the cost includes the land.
- Jose stated that Orange County has a 24" pipe in the International Drive area that they would like to replace with 42".
- Herman Tirado stated that a gravity line currently cuts across the proposed location for Pond 5B. Lockheed Martin has confirmed that this line will be phased out.
- Progress Energy has a major distribution line between International Drive and Universal Boulevard. They have an underground transmission line east of Universal.
- Orange County is considering putting overhead utilities underground and would pay the differential for this relocation (on Sand Lake Road between International Drive and Universal Boulevard).
- Orlando Utilities Commission (OUC) has a distribution line in the median.
- Victor Palulis (Progress Energy) stated that they would like to have additional discussions with Herman Tirado regarding Ponds 1 and 4A.
- Al Bowlin with Water Conserv II stated that they are not doing anything on the plant (south) side of the road. They cross to the left of the fire station driveway and go east in front of the fire station. There is a 42" line on the north and south side of the roadway. Water Conserv II facilities should be avoided during construction.

## 12. Traffic Operations

- The Traffic Operations Department has been closely involved and has signed off on all alternatives.
- Signals will be mast arms and some signals will be replaced.
- Street lights currently exist from the west end of the project to International Drive. A Lighting Justification Report will be completed as a part of this project.
- A statement was made that it is important to make sure there is a place to put light poles if street lights are added.
- ITS is not included in the scope of services for this project.

**13. Maintenance Issues**

- A Maintenance of Traffic (MOT) Plan and construction sequencing will be helpful for maintenance.
- Maintenance needs two feet behind wall for maintenance. 2:1 is preferred.
- Right-of-way is tight between International Drive and Universal Boulevard. Steve Godfrey stated that construction easements would be less expensive than right-of-way acquisition in this area due to business damages.

**14. Driveway impacts where there is no right-of-way taking**

- Driveways which are at different elevations from the roadway will not be improved relative to their current condition; we will match the grade that exists today.

**15. Validity of LRE**

- Tom Percival stated that the factor determining the validity of the LRE is whether or not to include the interchange at John Young Parkway. The current LRE does not include this interchange.
- The Turnpike Interchange is not included in the LRE.

**16. Right-of-Way Issues**

- Right-of-way is tight from International Drive to Universal Blvd. No right-of-way acquisition will put anyone out of business, although some parking is affected.
- Now that the right-turn lane from Sand Lake Road westbound to International Drive northbound has been eliminated, Perkins will not be affected.

**17. Right-of-Way Appraisal/Acquisition/Legal**

- There are no issues related to right-of-way appraisals at this time.

**18. Validity of Right-of-Way Cost Estimate**

- There are no issues related to the right-of-way cost estimate at this time.

**19. Other Issues**



- No other issues were raised.

The meeting was adjourned at 11:25 AM.

*This document is the writer's understanding of the topics and items discussed during the meeting. Any revisions to topics and items discussed can be made to Marianne Wood, Kimley- Horn & Associates, at 407-898-1511 or email to 'marianne.wood@kimley-horn.com'. If no revisions or comments are received by March 27, 2006, the memo will be considered accepted as distributed.*

**\*\*\*\*\* End of Meeting \*\*\*\*\***

Attachments: Meeting Agenda  
Sign-In Sheet

## AGENDA

### PD&E TEAM MEETING

February 27, 2006  
From 9:30 a.m. to 11:30 a.m.

Fin. Proj. No. 407143-3  
SR 482 (Sand Lake Rd) from Turkey Lake Rd to Presidents Drive

#### PROJECT OVERVIEW

1. Introductions
  - A. Invitees
  - B. Team Members
2. Description of Project
3. Schedule - Design and Following Phases
4. PD&E Study
  - A. Alignment and approved typical section
  - B. Local government concerns/requests
  - C. Public hearings/public sentiment
  - D. Commitments (to local governments, permitting agencies, property owners, etc.)

#### TECHNICAL DESIGN ISSUES

4. Drainage/Pond Siting
5. Environmental Services/Permitting
6. Contamination
7. Geotechnical
8. Design and Right of Way Survey
9. Structures
10. Utility Issues
11. Traffic Operations
12. Maintenance Issues
13. Driveway impacts where there is no right of way taking
  - A. Notice of Administrative Hearing Rights
  - B. Coordination with Project Manager and Right of Way if tie in will impact improvements
14. Validity of LRE
15. Right of Way Issues
16. Right of Way Appraisal/Acquisition/Legal
  - a. Property types/# of businesses/complex parcels
  - b. Pond Siting
  - c. Park and Ride Lots
  - d. Access Management
  - e. Property owner contacts?
17. Validity of Right of Way Cost Estimate

18. Other issues

# SIGN IN SHEET

Financial Project Nos. 407143-3  
 SR 482 (Sand Lake Road) from Turkey Lake Road to Presidents Drive  
 PD&E Team Meeting  
 From 9:30 a.m. to 11:30 a.m.  
 February 27, 2006  
 Volusia Conference Room

NAME	INITIAL	DEPARTMENT OR FIRM	BUSINESS ADDRESS	E-MAIL ADDRESS	TELEPHONE NO.
<b>FDOT PROJECT MANAGER</b>					
DECUR, Lance	<i>LD</i>	Environmental Management	719 S. Woodland Blvd., Deland, FL 32720	<a href="mailto:lance.decur@dot.state.fl.us">lance.decur@dot.state.fl.us</a>	386-943-5383
PERCIVAL, Tom	<i>TP</i>	Environmental Management	719 S. Woodland Blvd., Deland, FL 32720	<a href="mailto:tom.percival@dot.state.fl.us">tom.percival@dot.state.fl.us</a>	386-943-5404
<b>CONSULTANT(S)</b>					
Pete Sushinsky	<i>PS</i>	Parsons Brinckerhoff	100 E. Pine St. Orlando FL 32801	<a href="mailto:Sushinsky@PBWorld.com">Sushinsky@PBWorld.com</a>	407-587-7815
Steve Gortney		KHA	3660 Maguire Blvd Ste 200 Orlando FL 32803		407-898-1511
KIM ECHER		KHA	"		"
HERMAN TIRADO		KHA	"	<a href="mailto:herman.tirado@kimley-horn.com">herman.tirado@kimley-horn.com</a>	"
Mike Waddell		URS	313 E. Robinson St. Ste 245 Orlando FL 32801	<a href="mailto:mike_waddell@urcorp.com">mike_waddell@urcorp.com</a>	407 422-0353
Jan Everett		URS	313 E Robinson St, Ste 245, Ort	<a href="mailto:jan_everett@urcorp.com">jan_everett@urcorp.com</a>	" " " "
<b>CITY &amp; COUNTY</b>					
RAMDATT, Charles		City of Orlando	400 S. Orange Ave., Orlando, FL 32801		407-246-2281
BAXTER, Bill		Orange County	4200 S. John Young Pkwy., Orlando FL 32839		407-836-7900

# SIGN IN SHEET

Financial Project Nos. 407143-3

SR 482 (Sand Lake Road) from Turkey Lake Road to Presidents Drive

PD&E Team Meeting

From 9:30 a.m. to 11:30 a.m.

February 27, 2006

Volusia Conference Room

NAME	INITIAL	DEPARTMENT OR FIRM	BUSINESS ADDRESS	E-MAIL ADDRESS	TELEPHONE NO.
<u>UTILITY COMPANIES</u>					
Al Bowlin	HB	Jacques Energy	3300 Exchange Pl. Lakeland, FL	vicola.paluis@lakeland.com	407-942-9553
Jose Hernandez	JB	Water Conservation	10807 7925 Winter Garden, FL 32725	al.bowlin@waterconservation.com	407-656-2332 x205
	JH	Orange County Utilities	9750 CURRY FORD RD, ORLANDO FL 32825	jose.hernandez@ocfl.net	407-254-9718
<u>FDOT</u>					
ASGARINIK, Amir	AA	Consultant Project Management	719 S. Woodland Blvd., Deland, FL 32720	amir.asgarinik@dot.state.fl.us	386-943-5551
BARFIELD, Ed	EB	Right-of-Way/Legal	719 S. Woodland Blvd., Deland, FL 32720	ed.barfield@dot.state.fl.us	386-943-5068
BASS, Gary	GB	Utilities/Value Engineering	719 S. Woodland Blvd., Deland, FL 32720	gary.bass@dot.state.fl.us	386-943-5254
BELL, Richard	RB	Production Support	719 S. Woodland Blvd., Deland, FL 32720	richardw.bell@dot.state.fl.us	386-943-5548
BIZZIO, Mario	MB	District Design	719 S. Woodland Blvd., Deland, FL 32720	mario.bizzio@dot.state.fl.us	386-943-5362
BOOTH, Kristee	KB	Environmental Management	719 S. Woodland Blvd., Deland, FL 32720	kristee.booth@dot.state.fl.us	386-943-5036
BORCHIK, George	GB	Roadway Design	719 S. Woodland Blvd., Deland, FL 32720	george.borchik@dot.state.fl.us	386-943-5163
BRENNAN, Annette	AB	District Design	719 S. Woodland Blvd., Deland, FL 32720	annette.brennan@dot.state.fl.us	386-943-5543



# SIGN IN SHEET

Financial Project Nos. 407143-3

SR 482 (Sand Lake Road) from Turkey Lake Road to Presidents Drive

PD&E Team Meeting

From 9:30 a.m. to 11:30 a.m.

February 27, 2006

Volusia Conference Room

NAME	INITIAL	DEPARTMENT OR FIRM	BUSINESS ADDRESS	E-MAIL ADDRESS	TELEPHONE NO.
BREWER, Anne	BB	Environmental Management	719 S. Woodland Blvd., Deland, FL 32720	anne.brewer@dot.state.fl.us	386-943-5391
<del>BRADY, David</del> FOWLER, Richard	<del>DB</del> DR	Orlando Construction	133 S. Semoran Blvd., Orlando, FL		
GLEASON, Bob	GB	Drainage Design/Permits	719 S. Woodland Blvd., Deland, FL 32720	richard.fowler@dot.state.fl.us	386-943-5392
HALL, Jenice		Environmental Management	719 S. Woodland Blvd., Deland, FL 32720	bob.gleason@dot.state.fl.us	386-943-5390
HARKRIDER, Jim		Interstate Management	719 S. Woodland Blvd., Deland, FL 32720	jenice.hall@dot.state.fl.us	386-943-5734
HERTZ, Susanne		Quality Assurance - MOT	719 S. Woodland Blvd., Deland, FL 32720	james.harkrider@dot.state.fl.us	386-943-5186
HILL, Michael		Traffic Operations	719 S. Woodland Blvd., Deland, FL 32720	susanne.hertz@dot.state.fl.us	386-943-5332
JOHNSON, Rick	V.P.	Drainage Design/Permits	719 S. Woodland Blvd., Deland, FL 32720	michael.hill@dot.state.fl.us	386-943-5034
LINFORTH, Jonathan	JSL	Right-of-Way	719 S. Woodland Blvd., Deland, FL 32720	richard.johnson@dot.state.fl.us	386-943-5034
LOVETT, George		Production Support	719 S. Woodland Blvd., Deland, FL 32720	jonathan.linforth@dot.state.fl.us	386-943-5185
MAYLONE, Kevin		FDOT Legal	719 S. Woodland Blvd., Deland, FL 32720	george.lovett@dot.state.fl.us	386-943-5029
MC DANIEL, Rob		Surveying & Mapping	719 S. Woodland Blvd., Deland, FL 32720	kevin.maylone@dot.state.fl.us	386-943-5115
MOORE, Lemmon	LM	Surveying & Mapping	719 S. Woodland Blvd., Deland, FL 32720	robert.medaniel@dot.state.fl.us	386-943-5265
MORROW, Rick		FDOT Planning	719 S. Woodland Blvd., Deland, FL 32720	lemmon.moore@dot.state.fl.us	386-943-5141
MOTT, Debbie		Traffic Operations	719 S. Woodland Blvd., Deland, FL 32720	rick.morrow@dot.state.fl.us	386-943-5409
		Surveying & Mapping	719 S. Woodland Blvd., Deland, FL 32720	debbie.mott@dot.state.fl.us	386-943-5116

# SIGN IN SHEET

Financial Project Nos. 407143-3

SR 482 (Sand Lake Road) from Turkey Lake Road to Presidents Drive

PD&E Team Meeting

From 9:30 a.m. to 11:30 a.m.

February 27, 2006

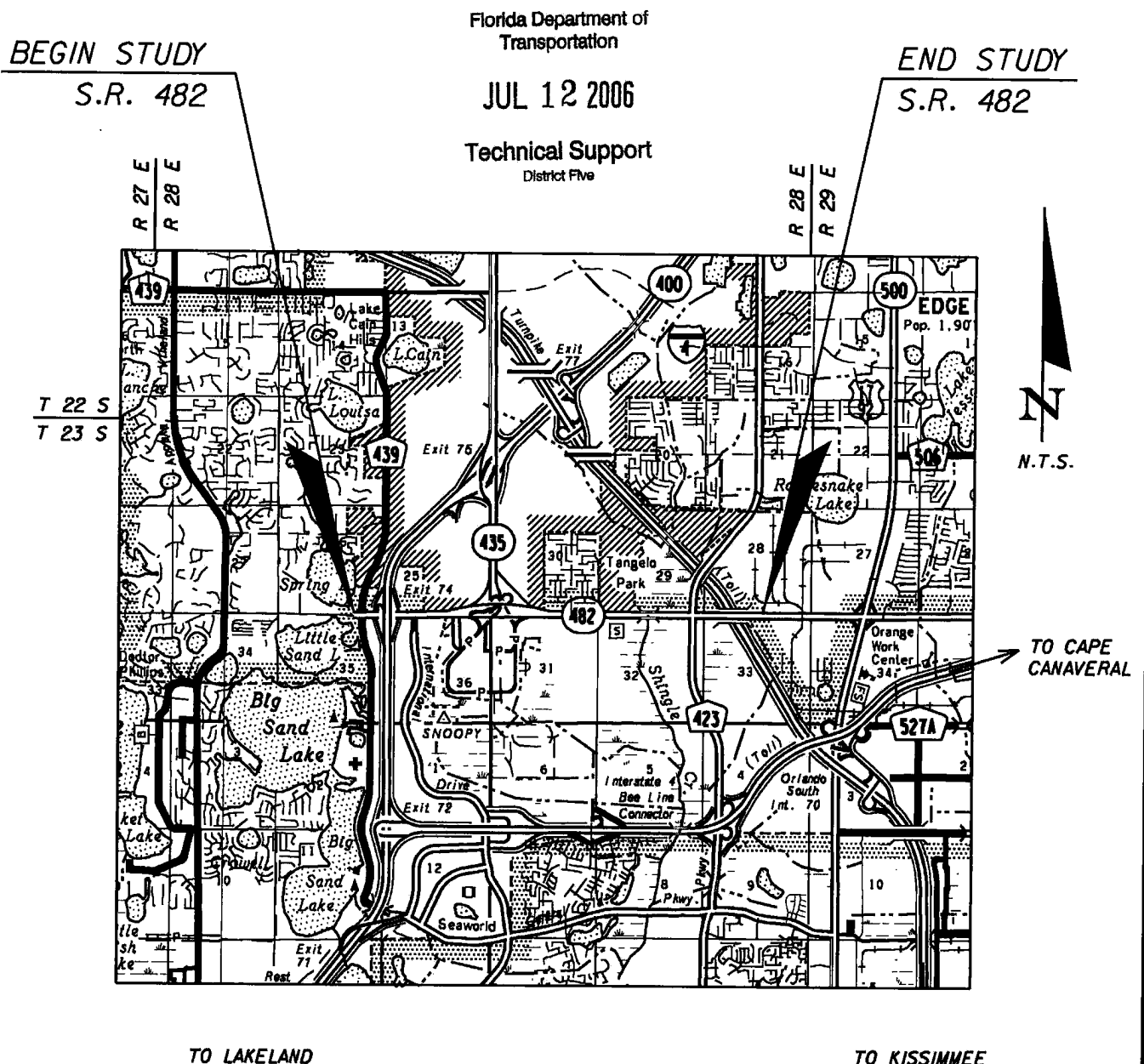
Volusia Conference Room

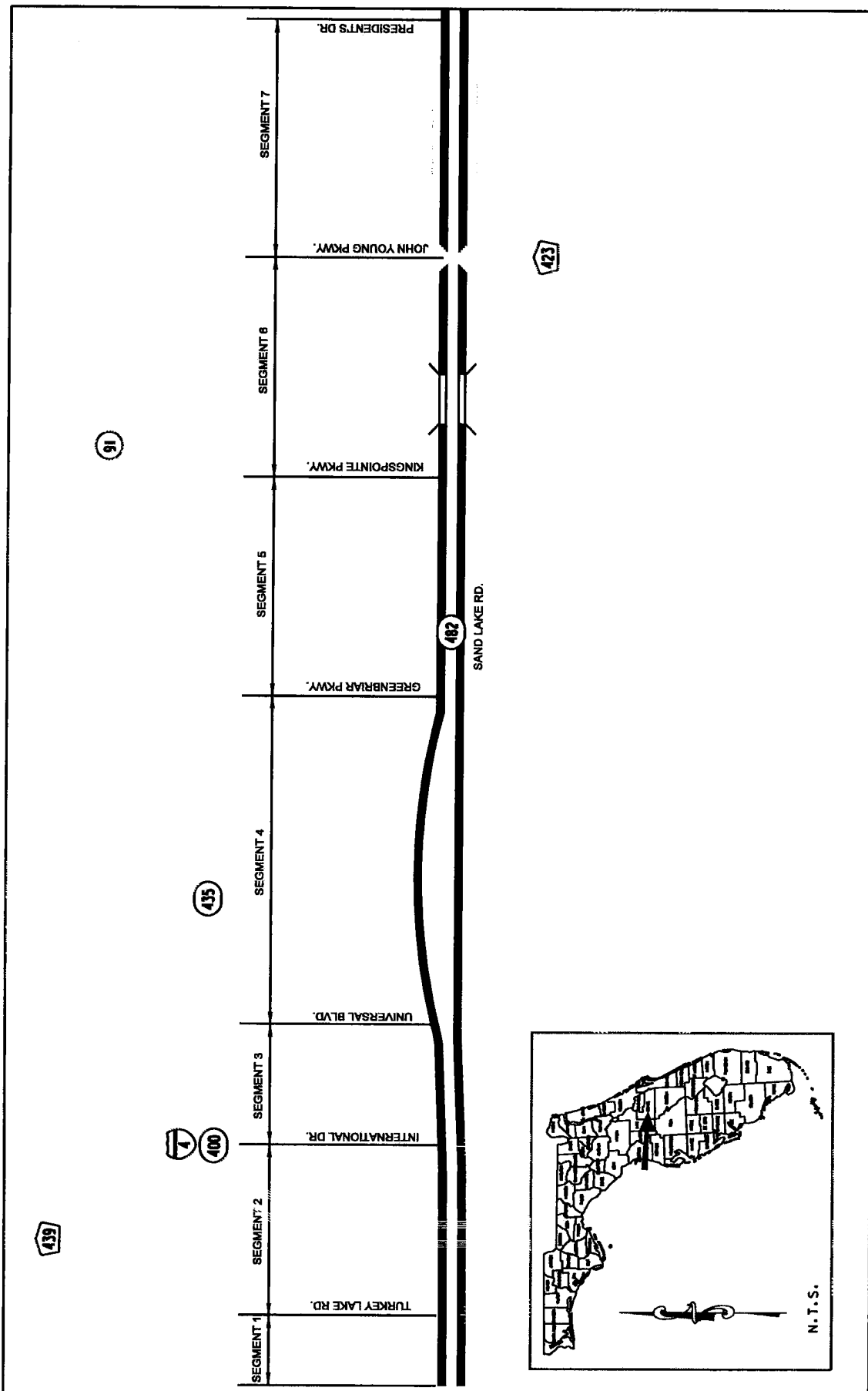
NAME	INITIAL	DEPARTMENT OR FIRM	BUSINESS ADDRESS	E-MAIL ADDRESS	TELEPHONE NO.
MUENCH, Pat	<i>PM</i>	Drainage Design	719 S. Woodland Blvd., Deland, FL 32720	patrick.muench@dot.state.fl.us	386-943-5434
PORTER, Anna		Roadway Design/Estimates	719 S. Woodland Blvd., Deland, FL 32720	anna.porter@dot.state.fl.us	386-943-5161
RAK, Leslie		Right-of-Way	719 S. Woodland Blvd., Deland, FL 32720	leslie.rak@dot.state.fl.us	386-943-5090
STAFFORD, Randy		Environmental Management	719 S. Woodland Blvd., Deland, FL 32720	randy.stafford@dot.state.fl.us	386-943-5395
TILLIS, Carol		Roadway Design - Estimates	719 South Woodland Blvd., Deland, FL 32720	carol.tillis@dot.state.fl.us	386-943-5225
TONIES, Stephen		Environmental Management	719 S. Woodland Blvd., Deland, FL 32720	stephen.tonies@dot.state.fl.us	386-943-5394
HATHFIELD, JONAH	<i>SPT</i>	ORLANDO MAINT.	420 W. LANDSTREET RD, ORL, FL 32784		409-858-5900
MARCHESE, Bill	<i>WPM</i>	COAST EST - DOT	719 S. Woodland Blvd., Deland, FL 32720	William.Marchese@dot.state.fl.us	386-943-5097
LaVallette, Vinnie	<i>DLF</i>	TBE Group	7185 Northlake Blvd Ste 1020 Altamonte SP 32701	vlaVallette@tbe-group.com	407-629-7144
LaVallette, Doris	<i>DLF</i>	FDOT Trans Dev.	719 S. Woodland, Deland	christy.salgere@dot.state.fl.us	386-943-5546
ARTUZ, RAUL	<i>REA</i>	FDOT - STRUCTURES	719 S. WOODLAND, DELAND	raul.artuz@dot.state.fl.us	386-943-5159
WUNDERLICH, Dan	<i>WAS</i>	TURNPIKE EMO		WunderlichDan@dot.state.fl.us	707-269-5933
SMITH, SHAD	<i>SS</i>	FDOT - Proj. Mgmt	719 S WOODLAND	Shad.Smith@dot.state.fl.us	386-943-5557

# **APPENDIX B – TYPICAL SECTION PACKAGE**

**STATE OF FLORIDA**  
**DEPARTMENT OF TRANSPORTATION**  
**TYPICAL SECTION PACKAGE**

S.R. 482 (SAND LAKE ROAD) (PD&E STUDY)  
ORANGE COUNTY (75002): FROM JUST WEST OF  
TURKEY LAKE ROAD TO PRESIDENT'S DRIVE  
FINANCIAL PROJECT ID NO. 407143-3-22-01





<p>S.R. 482 (SAND LAKE ROAD) PROJECT DEVELOPEMENT AND ENVIRONMENT STUDY</p>	<p>FINANCIAL PROJECT ID NO. 407143-3-22-01 ORANGE COUNTY</p>	<p>TYPICAL SEGMENT LIMITS</p>	
---	--	-----------------------------------	--

# PROJECT IDENTIFICATION

COUNTY ORANGE (75002)

PROJECT DESCRIPTION 6 LANING OF EXISTING 4 LANE ROADWAY AND BRIDGES

## PROJECT CONTROLS

### HIGHWAY SYSTEM

Yes No

- ☐ ☒ NATIONAL HIGHWAY SYSTEM  
☐ ☒ FLORIDA INTRASTATE HIGHWAY SYSTEM  
☒ ☐ STATE HIGHWAY SYSTEM  
☐ ☒ OFF STATE HIGHWAY SYSTEM

### FUNCTIONAL CLASSIFICATION

- ☐ RURAL  
☒ URBAN  
☐ FREEWAY/EXPWY. ☒ MAJOR COLL.  
☐ PRINCIPAL ART. ☐ MINOR COLL.  
☐ MINOR ART. ☐ LOCAL

### ACCESS CLASSIFICATION

- ☐ 1 - FREEWAY  
☐ 2 - RESTRICTIVE w/Service Roads  
☐ 3 - RESTRICTIVE w/660 ft. Connecting Spacing  
☐ 4 - NON-RESTRICTIVE w/2640 ft. Signal Spacing  
☒ 5 - RESTRICTIVE w/440 ft. Connection Spacing  
☐ 6 - NON- RESTRICTIVE w/1320 ft. Signal Spacing  
☐ 7 - BOTH MEDIAN TYPES  
☐ N/A

### CRITERIA

- ☒ NEW CONSTRUCTION / RECONSTRUCTION  
☐ RRR INTERSTATE / FREEWAY  
☐ RRR NON-INTERSTATE / FREEWAY  
☐ TDLC / NEW CONSTRUCTION / RECONSTRUCTION  
☐ TDLC / RRR  
☐ MANUAL OF UNIFORM MINIMUM STANDARDS  
(FLORIDA GREENBOOK) (OFF-STATE HIGHWAY ONLY)

### TRAFFIC

SEGMENT 1	YEAR	AADT
CURRENT	2005	46000
OPENING	2010	49650
DESIGN	2030	64440
DESIGN SPEED		40 MPH

SEGMENT 2	YEAR	AADT
CURRENT	2005	47900
OPENING	2010	51700
DESIGN	2030	67100
DESIGN SPEED		40 MPH

SEGMENT 3	YEAR	AADT
CURRENT	2005	34400
OPENING	2010	37200
DESIGN	2030	48200
DESIGN SPEED		40 MPH

### DISTRIBUTION

K 9.20 %  
D 54.00 %  
T<sub>24</sub> 5.05 %

LIST ANY POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION ELEMENTS:

NO VARIATION ON STATE SYSTEM

LIST MAJOR STRUCTURES LOCATION/DESCRIPTION - REQUIRING INDEPENDENT STRUCTURE DESIGN:

BRIDGE WIDENING FOR ALL FOUR EXISTING BRIDGES AT THE KIRKMAN AND SAND LAKE ROAD INTERCHANGE.

LIST MAJOR UTILITIES WITHIN PROJECT CORRIDOR:

GAS, OVERHEAD ELECTRIC, BURIED TELEPHONE, OVERHEAD TELEPHONE, OVERHEAD TRANSMISSION, WATER MAIN, SANITARY SEWER, UNDERGROUND FIBER, TRAFFIC SIGNALS.

LIST OTHER INFORMATION PERTINENT TO DESIGN OF PROJECT:

N/A

## PROJECT IDENTIFICATION

COUNTY ORANGE (75002)

PROJECT DESCRIPTION 6 LANING OF EXISTING 4 LANE ROADWAY AND BRIDGES

## PROJECT CONTROLS

### HIGHWAY SYSTEM

Yes No

- ☐ (X) NATIONAL HIGHWAY SYSTEM  
☐ (X) FLORIDA INTRASTATE HIGHWAY SYSTEM  
☒ ( ) STATE HIGHWAY SYSTEM  
☐ (X) OFF STATE HIGHWAY SYSTEM

### FUNCTIONAL CLASSIFICATION

- ☐ RURAL  
☒ URBAN  
☐ FREEWAY/EXPWAY. ☐ MAJOR COLL.  
☐ PRINCIPAL ART. ☐ MINOR COLL.  
☒ MINOR ART. ☐ LOCAL

### ACCESS CLASSIFICATION

- ☐ 1 - FREEWAY  
☐ 2 - RESTRICTIVE w/Service Roads  
☒ 3 - RESTRICTIVE w/660 ft. Connecting Spacing  
☐ 4 - NON-RESTRICTIVE w/2640 ft. Signal Spacing  
☐ 5 - RESTRICTIVE w/440 ft. Connection Spacing  
☐ 6 - NON- RESTRICTIVE w/1320 ft. Signal Spacing  
☐ 7 - BOTH MEDIAN TYPES  
☐ N/A

### CRITERIA

- ☒ NEW CONSTRUCTION / RECONSTRUCTION  
☐ RRR INTERSTATE / FREEWAY  
☐ RRR NON-INTERSTATE / FREEWAY  
☐ TDLC / NEW CONSTRUCTION / RECONSTRUCTION  
☐ TDLC / RRR  
☐ MANUAL OF UNIFORM MINIMUM STANDARDS  
(FLORIDA GREENBOOK) (OFF-STATE HIGHWAY ONLY)

### TRAFFIC

SEGMENT 4	YEAR	AADT
CURRENT	2005	46600
OPENING	2010	50300
DESIGN	2030	65200
DESIGN SPEED		55 MPH

SEGMENT 5	YEAR	AADT
CURRENT	2005	49500
OPENING	2010	53500
DESIGN	2030	69300
DESIGN SPEED		45 MPH

SEGMENT 6	YEAR	AADT
CURRENT	2005	39500
OPENING	2010	42700
DESIGN	2030	55300
DESIGN SPEED		55 MPH

SEGMENT 7	YEAR	AADT
CURRENT	2005	52200
OPENING	2010	56400
DESIGN	2030	73100
DESIGN SPEED		55 MPH

### DISTRIBUTION

K 9.20 %  
D 54.00 %  
T<sub>24</sub> 5.05 %

LIST ANY POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION ELEMENTS:

NO VARIATION ON STATE SYSTEM

LIST MAJOR STRUCTURES LOCATION/DESCRIPTION - REQUIRING INDEPENDENT STRUCTURE DESIGN:

PROPOSED BRIDGE REPLACEMENT AT SHINGLE CREEK AND  
BRIDGE WIDENING ALONG SAND LAKE ROAD, OVER FLORIDA'S TURNPIKE

LIST MAJOR UTILITIES WITHIN PROJECT CORRIDOR:

GAS, OVERHEAD ELECTRIC, BURIED TELEPHONE, OVERHEAD TELEPHONE, OVERHEAD  
TRANSMISSION, WATER MAIN, SANITARY SEWER, UNDERGROUND FIBER, TRAFFIC  
SIGNALS.

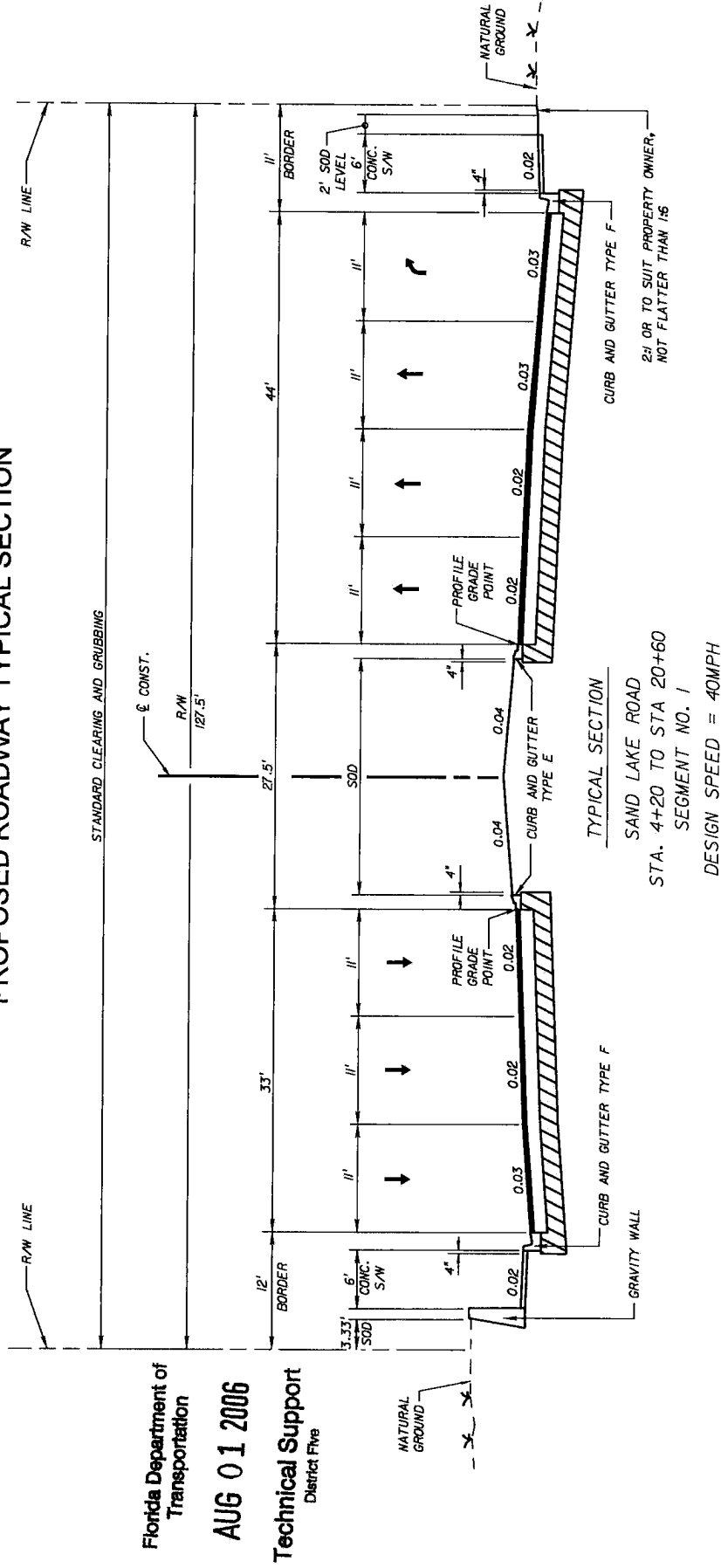
LIST OTHER INFORMATION PERTINENT TO DESIGN OF PROJECT:

N/A

# PROJECT IDENTIFICATION

FINANCIAL PROJECT ID 407143-3-22-01 WORK PROGRAM ITEM N/A COUNTY NAME ORANGE  
 STATE PROJECT NO. ORANGE COUNTY (75002) ROAD DESIGNATION S.R. 482 (SAND LAKE ROAD) LIMITS/MILEPOST JUST WEST OF TURKEY LAKE  
 FEDERAL AID PROJECT NO. N/A PROJECT DESCRIPTION 6 LANING OF 4 LANE ROADWAY & BRIDGE SEGMENTS ROAD TO PRESIDENT'S DRIVE

## PROPOSED ROADWAY TYPICAL SECTION



Florida Department of  
Transportation

AUG 01 2006

Technical Support  
District Five

APPROVED BY

*[Signature]*  
Steven G. Godfrey, P.E.  
Engineer Of Record

7/27/06  
Date

FDOT CONCURRENCE

*Annette K Brennan*  
Annette Brennan, P.E.  
FDOT District Design Engineer

8/14/06  
Date

FHWA CONCURRENCE

N/A  
Printed Name  
FHWA Transportation Engineer

\*\*\*\*\*SYTIME\*\*\*\*\*

\*\*\*\*\*DGN SPECIFICATION\*\*\*\*\*

\*\*\*\*\*PRE SPECIFICATION\*\*\*\*\*

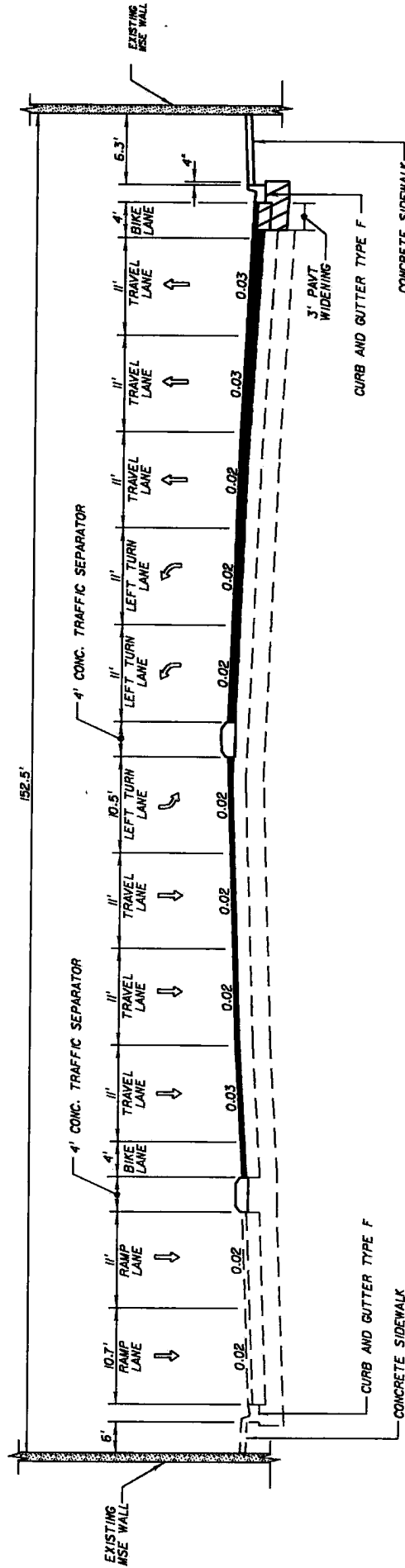
\*\*\*\*\*SPENTARS\*\*\*\*\*



# PROJECT IDENTIFICATION

FINANCIAL PROJECT ID	407143-3-22-01	WORK PROGRAM ITEM	N/A	COUNTY NAME	ORANGE
STATE PROJECT NO.	ORANGE COUNTY (75002)	ROAD DESIGNATION	S.R. 482 (SAND LAKE ROAD)	LIMITS/MILEPOST	JUST WEST OF TURKEY LAKE
FEDERAL AID PROJECT NO.	N/A	PROJECT DESCRIPTION	6 LANING OF 4 LANE ROADWAY & BRIDGE SEGMENTS ROAD TO PRESIDENT'S DRIVE		

## PROPOSED ROADWAY TYPICAL SECTION



**TYPICAL SECTION**  
 SAND LAKE ROAD  
 STA. 20+60 TO STA 43+15  
 SEGMENT NO. 2  
 (1-4 OVERPASS)  
 DESIGN SPEED = 40 MPH

APPROVED BY

*Steven G. Godfrey*  
 Steven G. Godfrey, P.E.  
 Engineer Of Record  
 Date 7/11/06

FDOT CONCURRENCE

*Annette K. Brennan*  
 Annette Brennan, P.E.  
 FDOT District Design Engineer  
 Date 8/14/06

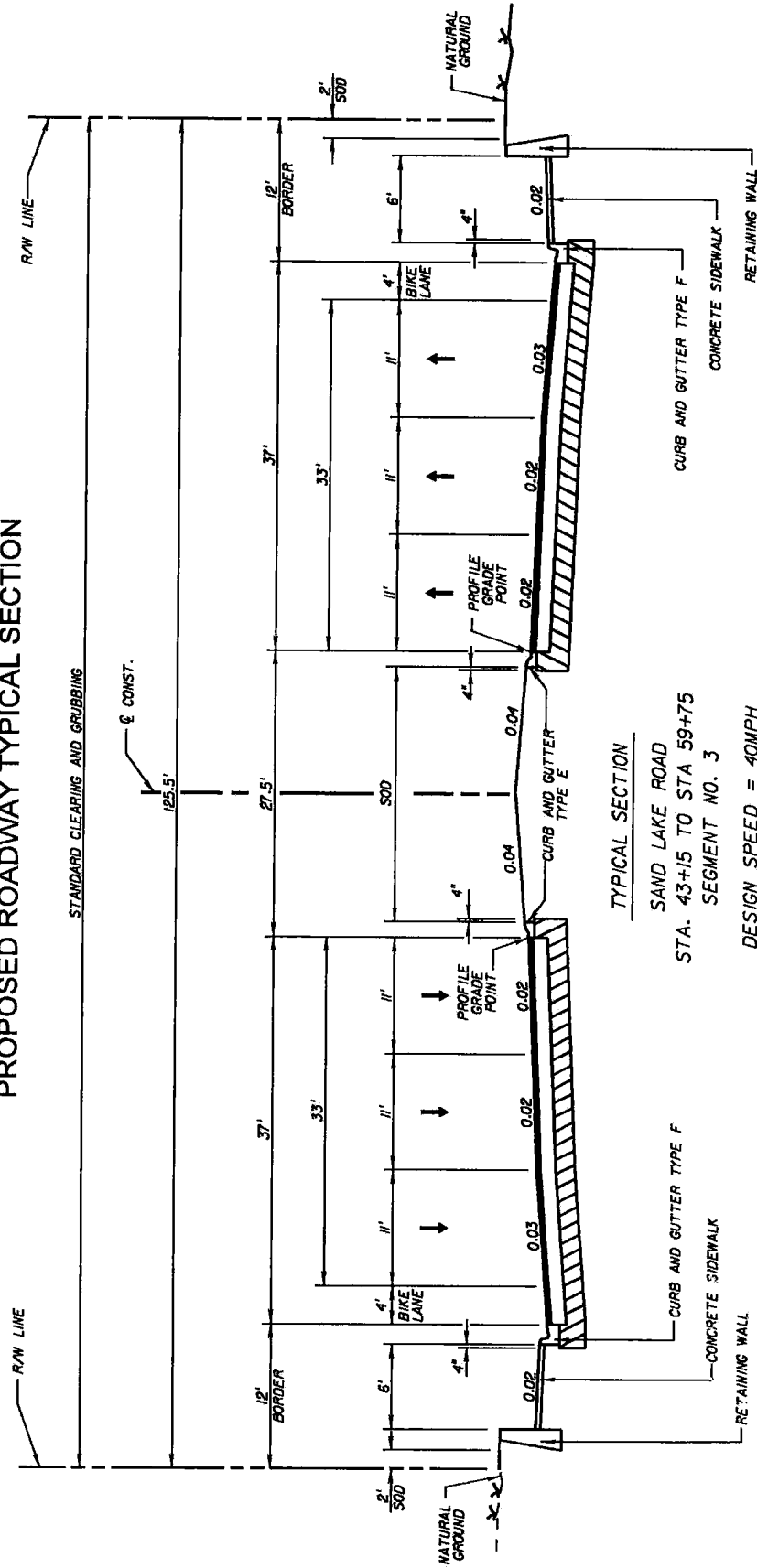
FHWA CONCURRENCE

Printed Name  
 N/A  
 FHWA Transportation Engineer

# PROJECT IDENTIFICATION

FINANCIAL PROJECT ID 407143-3-22-01 WORK PROGRAM ITEM N/A COUNTY NAME ORANGE  
 STATE PROJECT NO. ORANGE COUNTY (75002) ROAD DESIGNATION S.R. 482 (SAND LAKE ROAD) LIMITS/MILEPOST JUST WEST OF TURKEY LAKE  
 FEDERAL AID PROJECT NO. N/A PROJECT DESCRIPTION 6 LANE ROADWAY & BRIDGE SEGMENTS ROAD TO PRESIDENT'S DRIVE

## PROPOSED ROADWAY TYPICAL SECTION



### TYPICAL SECTION

SAND LAKE ROAD  
 STA. 43+15 TO STA 59+75  
 SEGMENT NO. 3

DESIGN SPEED = 40MPH

APPROVED BY

*Steven G. Godfrey, P.E.*  
 Steven G. Godfrey, P.E.  
 Engineer Of Record

FDOT CONCURRENCE

*Annette K. Brennan*  
 Annette Brennan, P.E.  
 FDOT District Design Engineer

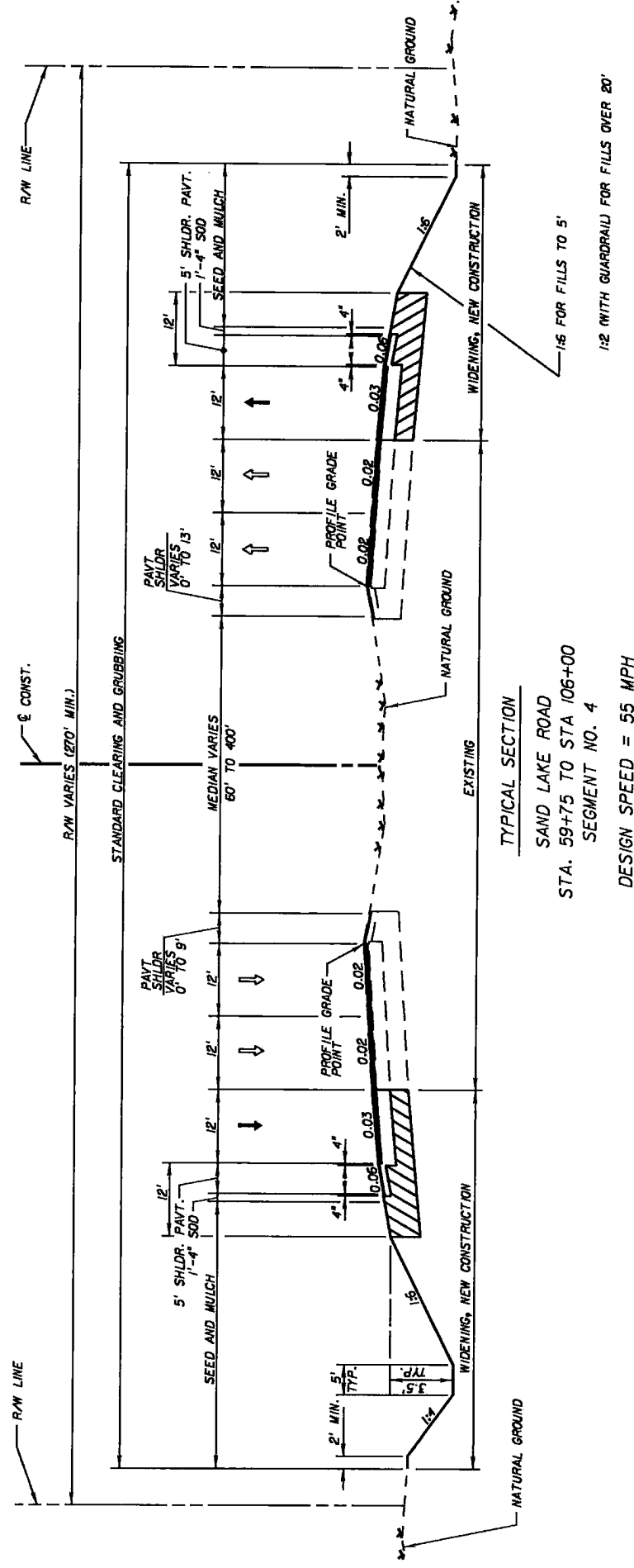
FHWA CONCURRENCE

*N/A*  
 N/A  
 Printed Name  
 FHWA Transportation Engineer

# PROJECT IDENTIFICATION

FINANCIAL PROJECT ID 407143-3-22-01 WORK PROGRAM ITEM N/A COUNTY NAME ORANGE  
 STATE PROJECT NO. ORANGE COUNTY (75002) ROAD DESIGNATION S.R. 482 (SAND LAKE ROAD) LIMITS/MILEPOST JUST WEST OF TURKEY LAKE  
 FEDERAL AID PROJECT NO. N/A PROJECT DESCRIPTION 6 LANE ROADWAY & BRIDGE SEGMENTS ROAD TO PRESIDENT'S DRIVE

## PROPOSED ROADWAY TYPICAL SECTION



FHWA CONCURRENCE

FDOT CONCURRENCE

APPROVED BY

*Steven G. Godfrey* 7/11/06  
 Steven G. Godfrey, P.E.  
 Engineer Of Record

*Annette K. Brennan* 8/14/06  
 Annette Brennan, P.E.  
 FDOT District Design Engineer

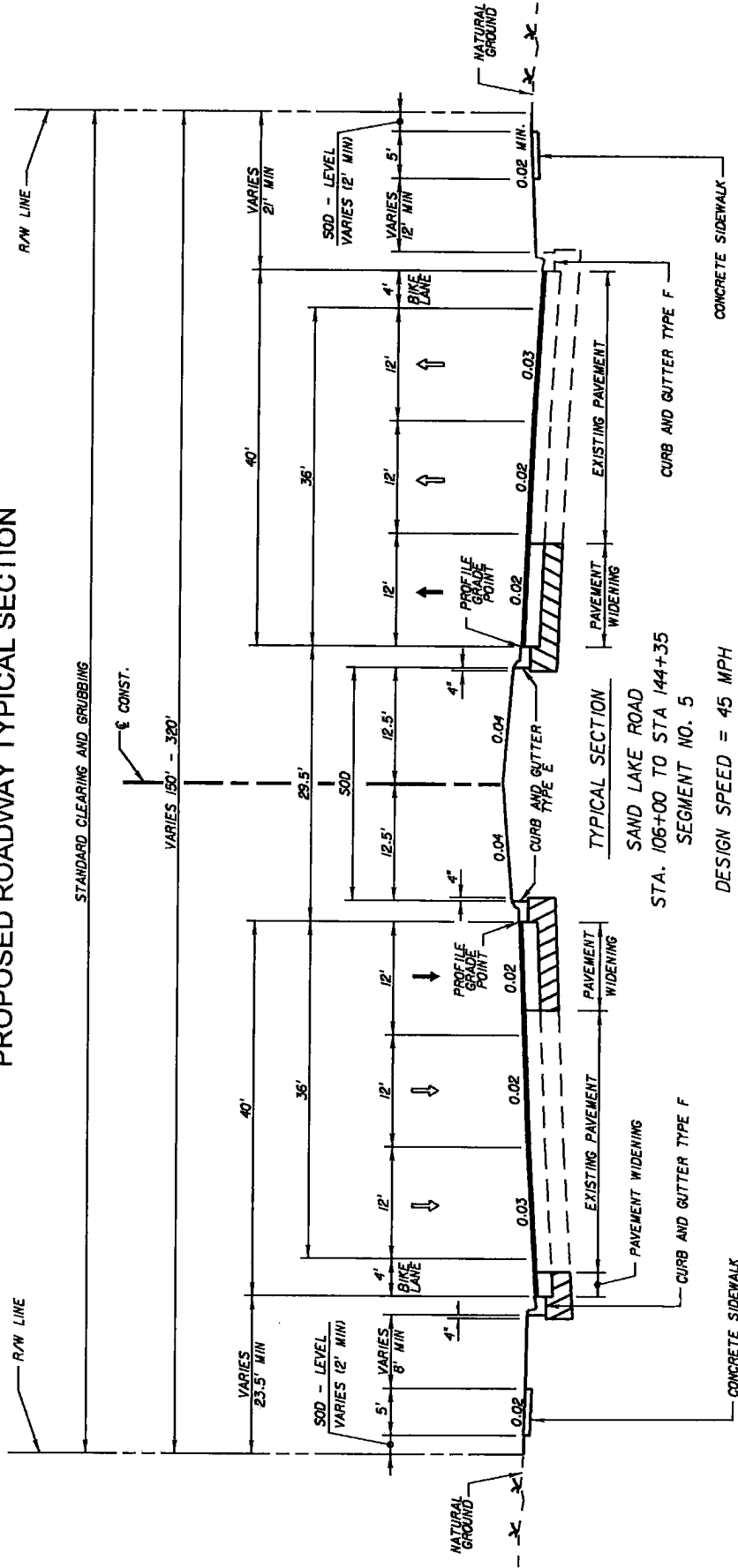
Printed Name  
 FHWA Transportation Engineer

N/A

# PROJECT IDENTIFICATION

FINANCIAL PROJECT ID 407143-3-22-01 WORK PROGRAM ITEM N/A COUNTY NAME ORANGE  
 STATE PROJECT NO. ORANGE COUNTY (75002) ROAD DESIGNATION S.R. 482 (SAND LAKE ROAD) LIMITS/MILEPOST JUST WEST OF TURKEY LAKE  
 FEDERAL AID PROJECT NO. N/A PROJECT DESCRIPTION 6 LANING OF 4 LANE ROADWAY & BRIDGE SEGMENTS ROAD TO PRESIDENT'S DRIVE

## PROPOSED ROADWAY TYPICAL SECTION



APPROVED BY

FDOT CONCURRENCE

FHWA CONCURRENCE

Steven G. Godfrey, P.E.  
 Engineer Of Record

Annette K. Brennan, P.E.  
 FDOT District Design Engineer

8/14/06  
 Date

N/A  
 Printed Name  
 FHWA Transportation Engineer

FINANCIAL PROJECT ID	407143-3-22-01	WORK PROGRAM	ITEM	COUNTY NAME	ORANGE
STATE PROJECT NO.	ORANGE COUNTY (75002)	ROAD DESIGNATION	S.R. 482 (SAND LAKE ROAD)	LIMITS/MILEPOST	JUST WEST OF TURKEY LAKE
FEDERAL AID PROJECT NO.	N/A	PROJECT DESCRIPTION	6 LANE ROADWAY & BRIDGE SEGMENTS	ROAD TO PRESIDENT'S DRIVE	

SAND LAKE ROAD  
STA. 144+35 TO STA 172+13  
SEGMENT NO. 6

DESIGN SPEED = 55 MPH

**FDOT CONCURRENCE**

FHWA CONCURRENCE

~~Steven G. Godfrey~~ Steven G. Godfrey, P.E.  
Engineer of Record  
Date 7/11/06

Annette Brennan, P.E.  
FDOT District Design Engineer

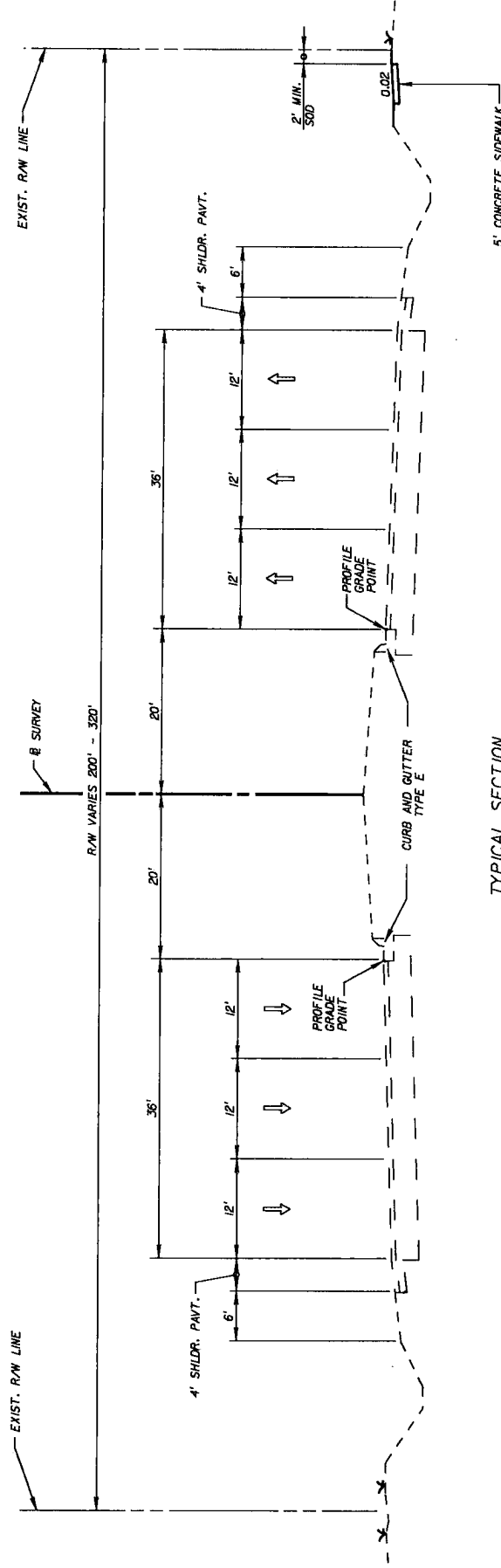
Annette K Brennan 8/14/06  
Date

**Printed Name**  
**FHWA Transportation Engineer**

# PROJECT IDENTIFICATION

FINANCIAL PROJECT ID 407143-3-22-01 WORK PROGRAM ITEM N/A COUNTY NAME ORANGE  
 STATE PROJECT NO. ORANGE COUNTY (75002) ROAD DESIGNATION S.R. 482 (SAND LAKE ROAD) LIMITS/MILEPOST JUST WEST OF TURKEY LAKE  
 FEDERAL AID PROJECT NO. N/A PROJECT DESCRIPTION 6 LANE ROADWAY & BRIDGE SEGMENTS ROAD TO PRESIDENT'S DRIVE

## PROPOSED ROADWAY TYPICAL SECTION



### TYPICAL SECTION

SAND LAKE ROAD  
 STA. 172+13 TO STA 218+00  
 SEGMENT NO. 7

DESIGN SPEED = 55 MPH

APPROVED BY	FDOT CONCURRENCE	FHWA CONCURRENCE
<div> <div> </div> <div> Steven G. Godfrey, P.E.  Engineer Of Record </div> </div> <div> 7/11/06  Date </div>	<div> <div> </div> <div> Annette Brennan, P.E.  FDOT District Design Engineer </div> </div> <div> 8/14/06  Date </div>	<div> <div> </div> <div> Printed Name  FHWA Transportation Engineer </div> </div> <div> N/A </div>

\*\*\*\*\*SYTIME\*\*\*\*\* \*\*\*\*\*DDNSPECIFICATION\*\*\*\*\*

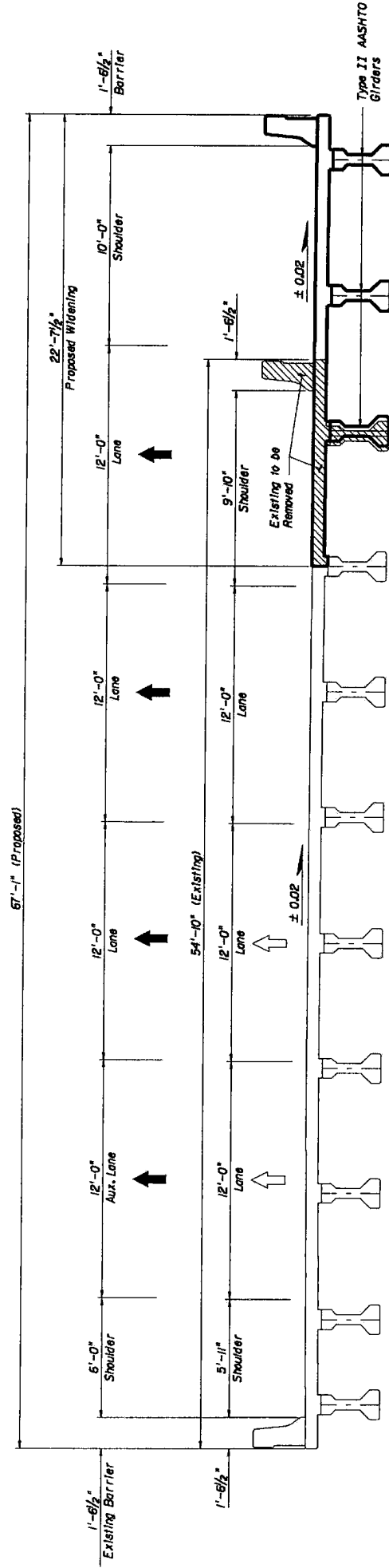
\*\*\*\*\*PRESPECIFICATION\*\*\*\*\*

\*\*\*\*\*\$PENTAG\$

# PROJECT IDENTIFICATION

FINANCIAL PROJECT ID 407143-3-22-01 WORK PROGRAM ITEM N/A COUNTY NAME ORANGE  
 STATE PROJECT NO. ORANGE COUNTY (75002) ROAD DESIGNATION S.R. 482 (SAND LAKE ROAD) LIMITS/MILEPOST JUST WEST OF TURKEY LAKE  
 FEDERAL AID PROJECT NO. N/A PROJECT DESCRIPTION 6 LANING OF 4 LANE ROADWAY & BRIDGE SEGMENTS ROAD TO PRESIDENT'S DRIVE

## PROPOSED STRUCTURE TYPICAL SECTION



SR 482 EASTBOUND OVER SR 435 SOUTHBOUND  
 BRIDGE NO. 750043

APPROVED BY

FDOT CONCURRENCE

FHWA CONCURRENCE

D. Michael Waddell 7/27/06  
 D. Michael Waddell, P.E.  
 Engineer Of Record

Annette K Brennan 8/14/06  
 Annette Brennan, P.E.  
 FDOT District Design Engineer

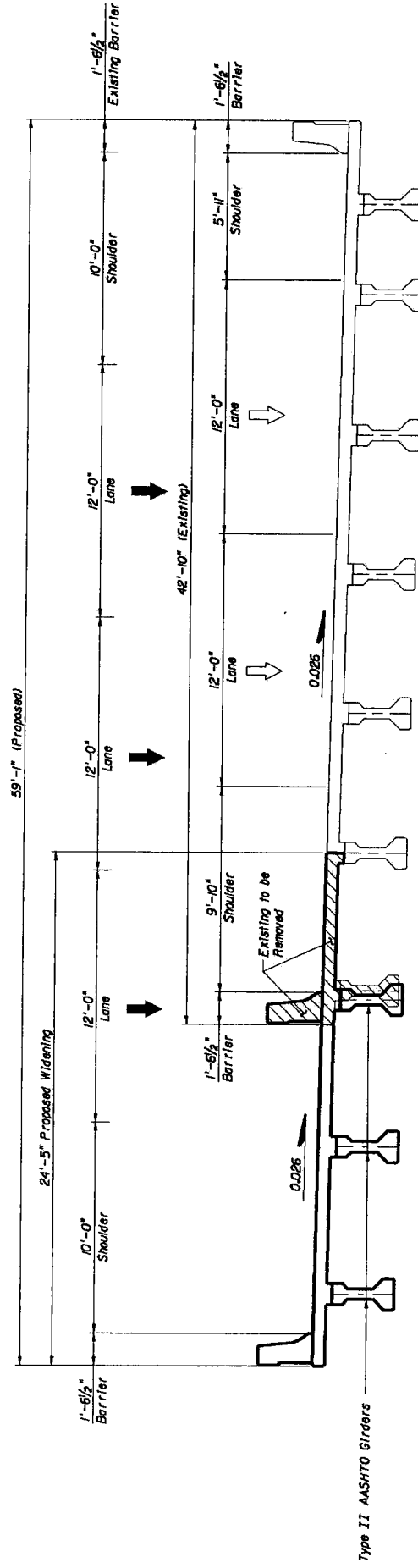
Printed Name  
 FHWA Transportation Engineer

N/A

# PROJECT IDENTIFICATION

FINANCIAL PROJECT ID 407143-3-22-01 WORK PROGRAM ITEM N/A COUNTY NAME ORANGE  
 STATE PROJECT NO. ORANGE COUNTY (75002) ROAD DESIGNATION S.R. 482 (SAND LAKE ROAD) LIMITS/MILEPOST JUST WEST OF TURKEY LAKE  
 FEDERAL AID PROJECT NO. N/A PROJECT DESCRIPTION 6 LANING OF 4 LANE ROADWAY & BRIDGE SEGMENTS ROAD TO PRESIDENT'S DRIVE

## PROPOSED STRUCTURE TYPICAL SECTION



SR 482 WESTBOUND OVER SR 435 SOUTHBOUND  
 BRIDGE NO. 750044

APPROVED BY

*D. Michael Waddell*  
 D. Michael Waddell, P.E.  
 Engineer of Record

7/27/06  
 Date

FDOT CONCURRENCE

*Annette K Brennan*  
 Annette Brennan, P.E.  
 FDOT District Design Engineer

8/14/06  
 Date

FHWA CONCURRENCE

N/A  
 Printed Name  
 FHWA Transportation Engineer



FINANCIAL PROJECT ID	407/43-3-22-01	WORK PROGRAM ITEM	N/A	COUNTY NAME	ORANGE
STATE PROJECT NO.	ORANGE COUNTY (75002)	ROAD DESIGNATION	S.R. 482 (SAND LAKE ROAD)	LIMITS/MILEPOST	JUST WEST OF TURKEY LAKE
FEDERAL AID PROJECT NO.	N/A	PROJECT DESCRIPTION	6 LANING OF 4 LANE ROADWAY & BRIDGE SEGMENTS	ROAD TO PRESIDENT'S DRIVE	

67'-1" (Proposed)

25'-5" Proposed Widening

6'-0" Shoulder

12'-0" Aux. Lane

12'-0" Lane

12'-0" Lane

12'-0" Lane

12'-0" Lane

12'-0" Lane

5'-11" Shoulder

1'-6 1/2" Barrier

50'-11" (Existing)

Existing to be Removed

Type II AASHTO Girders

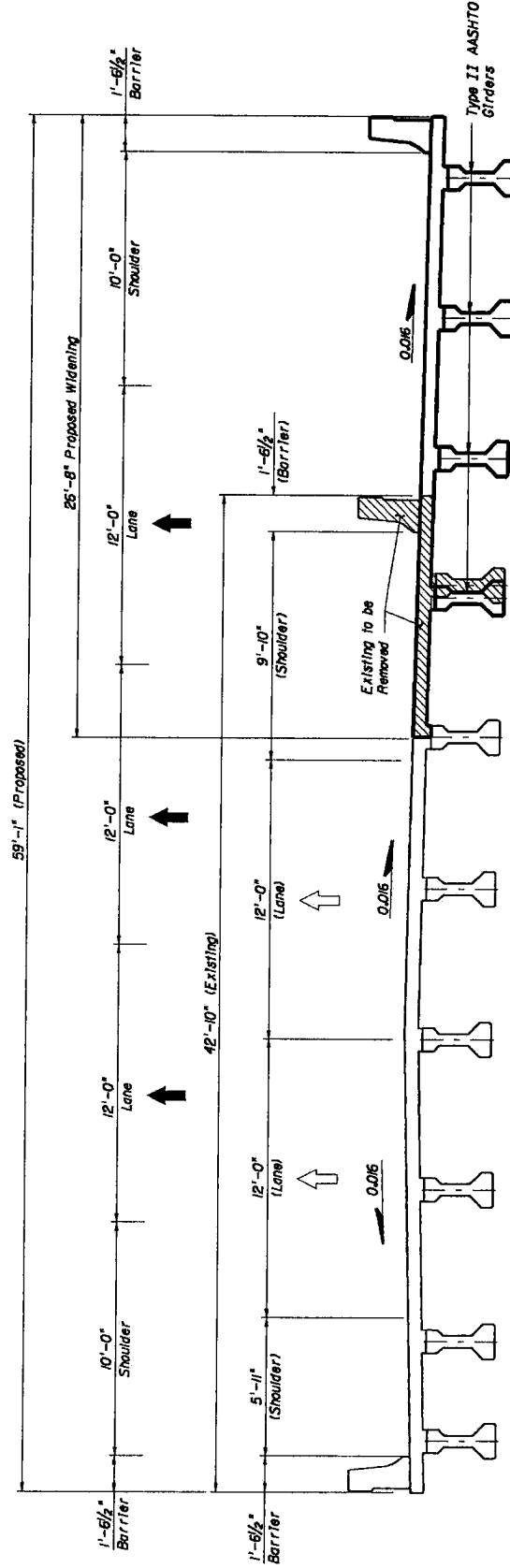
SR 482 WESTBOUND OVER SR 435 NORTHBOUND  
BRIDGE NO. 750144

APPROVED BY	FDOT CONCURRENCE	FHWA CONCURRENCE
<u>D. Michael Waddell</u> D. Michael Waddell, P.E. Engineer Of Record	<u>Annette K Brennan</u> Annette Brennan, P.E. FDOT District Design Engineer	<u>N/A</u>  Printed Name FHWA Transportation Engineer

# PROJECT IDENTIFICATION

FINANCIAL PROJECT ID	407143-3-22-01	WORK PROGRAM ITEM	N/A	COUNTY NAME	ORANGE
STATE PROJECT NO.	ORANGE COUNTY (75002)	ROAD DESIGNATION	S.R. 482 (SAND LAKE ROAD)	LIMITS/MILEPOST	JUST WEST OF TURKEY LAKE
FEDERAL AID PROJECT NO.	N/A	PROJECT DESCRIPTION	6 LANING OF 4 LANE ROADWAY & BRIDGE SEGMENTS ROAD TO PRESIDENT'S DRIVE		

## PROPOSED STRUCTURE TYPICAL SECTION



SR 482 EASTBOUND OVER SR 435 NORTHBOUND  
BRIDGE NO. 750143

FHWA CONCURRENCE

FDOT CONCURRENCE

APPROVED BY	DATE	DATE
<i>D. Michael Waddell</i>	7/27/06	8/14/06
D. Michael Waddell, P.E. Engineer Of Record	Date	Date

Printed Name  
FHWA Transportation Engineer

H:\T\ABLEV\rdme12003.1n

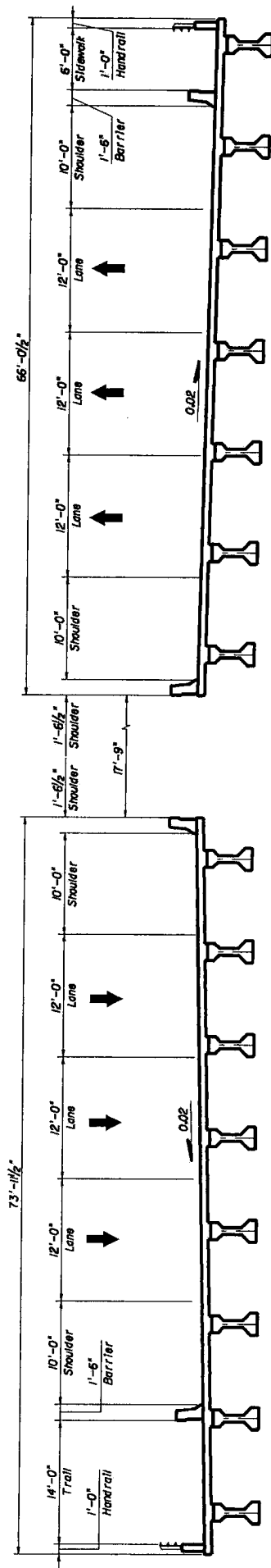
K:\PDR\MO\NO\TypSect04.dgn

Thu Jul 27 10:55:02 2006 H:\PDR\Jax16\2721030.00002\TYPSECT\ACK\TypSect04.dgn

# PROJECT IDENTIFICATION

FINANCIAL PROJECT ID 407143-3-22-01 WORK PROGRAM ITEM N/A COUNTY NAME ORANGE  
 STATE PROJECT NO. ORANGE COUNTY (75002) ROAD DESIGNATION S.R. 482 (SAND LAKE ROAD) LIMITS/MILEPOST JUST WEST OF TURKEY LAKE  
 FEDERAL AID PROJECT NO. N/A PROJECT DESCRIPTION 6 LANING OF 4 LANE ROADWAY & BRIDGE SEGMENTS ROAD TO PRESIDENT'S DRIVE

## PROPOSED STRUCTURE TYPICAL SECTION



BRIDGE AT SHINGLE CREEK

APPROVED BY

FDOT CONCURRENCE

FHWA CONCURRENCE

*D. Michael Waddell*  
 D. Michael Waddell, P.E.  
 Engineer Of Record  
 Date 7/27/06

*Annette Brennan*  
 Annette Brennan, P.E.  
 FDOT District Design Engineer  
 Date 8/14/06

Printed Name  
 FHWA Transportation Engineer  
 N/A

FINANCIAL PROJECT ID	407143--3-22-01	WORK PROGRAM ITEM	N/A	COUNTY NAME	ORANGE
STATE PROJECT NO.	ORANGE COUNTY (75002)	ROAD DESIGNATION	S.R. 482 (SAND LAKE ROAD)	LIMITS/MILEPOST	JUST WEST OF TURKEY LAKE
FEDERAL AID PROJECT NO.	N/A	PROJECT DESCRIPTION	6 LANE ROADWAY & BRIDGE	SEGMENTS	ROAD TO PRESIDENT'S DRIVE

Technical drawing of a highway cross-section showing proposed widening and various dimensions. The drawing includes the following elements and dimensions:

- Overall Width:** 66'-0 1/2" (Total width of the proposed section).
- Shoulder:** 10'-0" (Width of the shoulder on the left side).
- Lane:** 12'-0" (Width of each travel lane, indicated by arrows).
- Barrier:** 1'-6" (Width of the barrier on the left side).
- SideWalk:** 6'-0" (Width of the sidewalk on the left side).
- Fence (Typ):** 1'-0" (Width of the fence on the left side).
- Proposed Widening:** 10'-3 1/2" (Width of the proposed widening on the right side).
- Remove and replace hatched portion of barrier and slab:** (Indicated by a hatched area on the right side).
- Type I Beam (Typ):** (Indicated by a beam symbol on the right side).
- PGI:** (Indicated by a point on the right side).
- Dimensions on the right side:**
  - 3'-3 1/2" (Width of the existing section on the right).
  - 10'-6" (Width of the existing section on the right).
  - 7'-0" (Width of the existing section on the right).
  - 3'-3 1/2" (Width of the existing section on the right).
- Other dimensions:**
  - 38'-0" (Total width of the existing section on the left).
  - 1'-6 1/2" (Width of the existing section on the left).
  - 1'-8 1/2" (Width of the existing section on the left).
  - 0.02 (Small dimension on the right side).

## FHWA CONCURRENCE

*Printed Name*  
FHWA Transportation Engineer

Annette Brennan, P.E. 8/14/06 Date

D. Michael Waddell 7/27/06  
Date  
D. Michael Waddell, P.E.  
Engineer of Record

# **APPENDIX C – PROPERTY OWNER CORRESPONDENCE**

MORAN & SHAMS, P.A.  
ATTORNEYS AT LAW

*Respond, Advise and Serve™*

WALTER G. BENJAMIN

May 26, 2006

GARY M. BERKSON

ROBERT M. COX

KEITH C. DURKIN

FRANK GARCIA

C. JASON GRUNDORF

MARK H. JAMIESON

SCOTT E. JOHNSON

JAMES F. KIDD

CLINTON C. LYONS, JR.

BRIAN J. MORAN

THOMAS P. MORAN

SARAH P. REINER

MAURICE SHAMS

SIDNEY H. SHAMS

KATHRYN A. TERRY

Steven G. Godfrey  
Kimley-Horn & Associates, Inc.  
3660 Maguire Blvd., Suite 200  
Orlando, FL 32803

Thomas G. Percival, Jr.  
Department of Transportation  
719 S. Woodland Blvd., MS501  
Deland, FL 32720

Shad M. Smith, P.E.  
Department of Transportation  
719 S. Woodland Blvd., MS 542  
Deland, FL 32720

Re: State Road 482, Sand Lake Road Project  
Record of Public Hearing, May 25, 2006  
Fish Bones at 6707 Sand Lake Road/ Talk of the Town Restaurants

Gentlemen:

On behalf of Fish Bones at Sand Lake Road and Talk of the Town Restaurants, we wish to confirm by this letter our concerns expressed at the public hearing on May 25, 2006 and amplify those concerns pertaining to the proposed expansion of State Road 482, Sand Lake Road.

Fish Bones at 6707 W. Sand Lake Road is on the North side of Sand Lake Road. Pursuant to the proposal of the Department of Transportation, 15 feet is to be taken from the front of the Fish Bones property. However, the proposed taking from the Wyndham Hotel property on the South side of the proposed road expansion is very minimal. The alignment of the expansion of Sand Lake Road minimizes the impact on the Wyndham Hotel, including their parking, landscape and driveways. The taking of substantially more of the Fish Bones property in order to minimize the impact on the Wyndham Hotel and its property is inequitable and unjustifiable.

The proposed taking of property at the front of the Fish Bones restaurant is crucial and will have a substantial impact on the continuing operation of the Fish Bones restaurant. It will eliminate several important parking spaces and cause a congestion of vehicles in getting into the restaurant. It will affect the ambiance of the restaurant since it would be much closer to Sand Lake Road with less landscape and less parking. In addition, the existing signage will be affected. There may be a substantial difference in the grading between the street and the parking area, which will make it difficult for customers to drive into the parking area and to the restaurant. The pedestrian traffic to the restaurant from International Drive may be substantially reduced or eliminated. The

**MORAN & SHAMS, P.A.**

Fish Bones Restaurant/ Sand Lake Road Project  
Record of May 25, 2006 Public Hearing  
Page 2

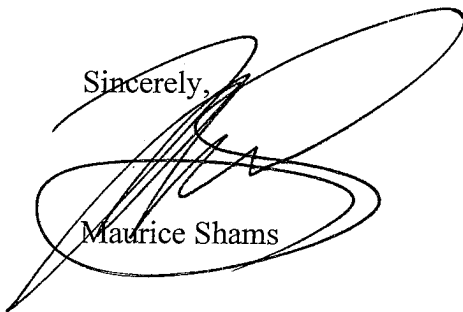
entrance to the restaurant will be substantially altered and valet parking may have to be eliminated since the space in front of the restaurant will be reduced and congested. Since the result of the alignment of the proposed road will cause more property to be taken from a strategic location of the Fish Bones restaurant, this could cause the restaurant to have to close its existing operation.

Any re-alignment recommended by the Wyndham Hotel representatives that will result in a greater taking of the Fish Bones property to accommodate the Hotel will be of serious concern to the owners of the Fish Bones restaurant. The imbalance created by the existing plan of the Department of Transportation would only be amplified by acceptance of the recommendations proposed by the Wyndham Hotel representatives.

We respectfully request that the Department of Transportation correct the imbalance of the taking of the property North and South of the proposed Sand Lake Road. This letter is submitted prior to June 6, 2006 and is requested to be a part of the record of the Public Hearing of May 25, 2006 as affirmed by the Department of Transportation representatives at the Public Hearing. Please also send a copy of the recommendations submitted to the Department of Transportation by the representatives of the Wyndham Hotel which were referred to at the May 25, 2006 hearing.

We appreciate the courtesy that has been extended by Mr. Godfrey and Mr. Percival, the Project Manager. We would appreciate the continuation of these courtesies as the project moves forward in the design phase.

Sincerely,

A large, stylized handwritten signature in black ink, appearing to read 'M. Shams', is written over the word 'Maurice Shams'.

Maurice Shams

MS/bjl

cc: Fish Bones Restaurant  
Talk of the Town Restaurants

# TIPTON ASSOCIATES INCORPORATED

TRAFFIC/TRANSPORTATION/CIVIL ENGINEERING

## A. Problems with FDOT PD&E Recommended Alignment:

1. Driveway grade problem
2. Inadequate driveway profile transitions
3. Retaining wall blocking sight distance for driveway exiting maneuvers
4. Front outside eating area eliminated
5. Pole sign is impacted
6. Lose cross access to east (Fish Bones)

## B. Possible Solutions:

1. Reduce right-of-way taking by:
  - a. Raise grade of Sand Lake Road to store front height at Popeyes front door
  - b. Moving right-of-way north to face of Popeye's building
  - c. Shift Sand Lake Road south at the intersection with International Drive to align eastbound through traffic and shift lanes to north (toward Popeyes) as they proceed eastbound
  - d. Place sidewalk on HS Landholdings (Popeyes) property
2. Reduce driveway grade by:
  - a. Raising grade of Sand Lake Road
  - b. Use inverted crown on Sand Lake Road
  - c. Use 0.03 cross slope across all lanes on inverted crown
3. Improve sight distance by:
  - a. Raising grade of Sand Lake Road to eliminate retaining wall

## C. What cannot be expected to be approved by FDOT:

1. Eliminate bike paths
2. Reduce through lane widths to less than 11 feet
3. Reduce sidewalk width to less than six feet when adjacent to curb



# TIPTON ASSOCIATES INCORPORATED

## TRAFFIC/TRANSPORTATION/CIVIL ENGINEERING

Wyndham

A. Problems with FDOT PD&E Recommended Alignment:

1. Lose green space/trees between right-of-way and internal roads
2. Inadequate driveway grade transition
3. Driveway grade problem for buses and semi trailer trucks
4. Radii problems on site for buses and semi trailer trucks
5. Access to check-in/check-out lobby impacted during construction
6. Parking spaces lost
7. Retaining wall blocking sight distance for driveway exiting maneuvers

B. Possible Solutions:

1. Reduce right-of-way taking on south side by:
  - a. Moving right-of-way north to face of Popeye's building
  - b. Reduce median width from Station 47+50± to Station 56+50±
  - c. Reduce the single left turn lanes width to 10 feet
  - d. Shift Sand Lake Road south at the intersection with International Drive to align eastbound through traffic and shift lanes to north (away from Wyndham) as they proceed eastbound
  - e. Place sidewalk on Wyndham property
2. Reduce driveway grade by:
  - a. Raising grade of Sand Lake Road
  - b. Shifting driveway to east to allow larger grade transitions to bus drop off area and provide outbound driveway at the same location, eliminate existing east driveway and its approach
  - c. Use inverted crown on Sand Lake Road
  - d. Use 0.03 cross slope across all lanes on inverted crown
3. Improve sight distance by:
  - a. Raising grade of Sand Lake Road to eliminate retaining wall
4. Relocate parking/remove retaining wall/improve on-site circulation/green space with space added between internal circulation road and FDOT right-of-way.
  - a. Move the second level covered pickup area approximately nine feet closer to building
  - b. Move the access road so there is green space between it and right-of-way for slope to eliminate retaining wall
  - c. Shift access road closer to building to save parking at each end of critical area

# TIPTON ASSOCIATES INCORPORATED

TRAFFIC/TRANSPORTATION/CIVIL ENGINEERING

C. What cannot be expected to be approved by FDOT:

1. Eliminate bike paths
2. Reduce through lane widths to less than 11 feet
3. Reduce sidewalk width to less than six feet when adjacent to curb

760 MAGUIRE BOULEVARD • ORLANDO, FL 32802-3751  
(407) 894-2055 • 1-800-447-9836 • FAX (407) 896-9949

**UNIVERSAL CITY  
PROPERTY MANAGEMENT III, LLC**

---

9751 Universal Boulevard      Orlando, Florida 32819  
Phone: 407-226-3214      Fax: 407-226-3218

May 25, 2006

Mr. Tom Percival  
FDOT District 5  
719 S. Woodland Blvd.  
Deland, FL 32720

Re: **Sand Lake Road**

Dear Mr. Percival:

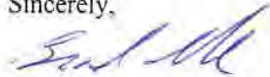
Lockheed Martin Corporation Properties is the current owner of the property located on the south side of Sand Lake Road, between the Lockheed Martin Plant and the Orange County South Water Reclamation Facility (the "Property") which is now under agreement in principle with Universal City Property Management III (UCPM). The pond 5a and 5b locations shown in the draft PD&E study are not compatible with our current planning for this Property, and would have a significant impact on the Property. Therefore, UCPM would not be supportive of locating pond 5 in either of the locations (a or b) presently shown.

UCPM is also the owner of substantial property to the south of this Property, and therefore would recommend that the State consider further evaluating alternatives to the current Pond 5a or 5b. UCPM would be willing to provide all master storm water permit information to the PD&E engineers for formal evaluation of alternate locations.

In addition, UCPM is preparing a detailed Development Plan for the Property for submission to Orange County in the last quarter of 2006. Our Development Plan is based on the curb cuts and median openings currently existing on Sand Lake Road. We would therefore recommend that the State evaluate the current PD&E study based on our Development Plan to ensure that any changes in median openings and curb cuts don't have a negative impact on land value and planned uses. Again, UCPM would be willing to share all of its information with the PD&E engineers to allow for prompt review.

Please feel free to contact me if additional information is required.

Sincerely,



Brad Goeb  
Project Director

Cc: Marc Watson, UCPM  
Bruce Williams, TEI

MAY 31 2006

17144

May 30, 2006

**FOLEY & LARDNER LLP  
ATTORNEYS AT LAW**

111 NORTH ORANGE AVENUE, SUITE 1800  
ORLANDO, FL 32801-2386  
P. O. BOX 2193  
ORLANDO, FL 32802-2193  
407.423.7656 TEL  
407.648.1743 FAX  
www.foley.com

WRITER'S DIRECT LINE  
407.244.7128  
tedwards@foley.com EMAIL

CLIENT/MATTER NUMBER  
033918-0106

**VIA U.S. MAIL AND EMAIL**

Mr. Steve Godfrey, P.E.  
Kimley-Horn and Associates, Inc.  
3660 Maguire Blvd., Suite 200  
Orlando, FL 32803

Re: SR 482 PD&E Study – Alternative Pond Site 5A/5B

Dear Mr. Godfrey:

Please be advised our law firm represents LMC Properties, Inc. ("LMC") in reference to the above matter. LMC owns fee simple title to approximately 174 acres upon which the SR 482 PD&E Study has preliminarily located Pond 5A or alternatively Pond 5B consisting of approximately 6 acres. LMC, and its agents, employees and representatives, have never consented or acquiesced to the location of the Ponds and strongly object to the same.

Please be advised the subject property is vested against DRI Review under Section 380.06, Florida Statutes, and is vested against concurrency requirements and consistency with the Comprehensive Policy Plan under Section 163.3167(8), Florida Statutes, and Sections 30-363 and 30-372 of the Orange County Code. On or about March 6, 2006, LMC submitted an application for rezoning of the subject property to Planned Development for a mixed use project for which the location of the ponds would be inconsistent, detrimental, and significantly impact the utility of the site. In addition, LMC is in contract negotiations with its neighbor to the south, Universal City Property Management III LLC ("UCPM"), to sell the easterly 101 acres of the subject property upon which the ponds are tentatively located, and the location of the ponds would severely impact the utility of the property by UCPM.

We understand UCPM has proposed alternative solutions for the drainage requirements of Pond 5A or Pond 5B which would not impact LMC's property. LMC encourages FDOT to carefully consider any alternatives. LMC reiterates its objection to the Pond 5A or Pond 5B being located upon LMC's property. The subject property is far too valuable due to the vesting and entitlements to be used for storm water ponds.

BOSTON  
BRUSSELS  
CHICAGO  
DETROIT

JACKSONVILLE  
LOS ANGELES  
MADISON  
MILWAUKEE

NEW YORK  
ORLANDO  
SACRAMENTO  
SAN DIEGO

SAN DIEGO/DEL MAR  
SAN FRANCISCO  
SILICON VALLEY  
TALLAHASSEE

TAMPA  
TOKYO  
WASHINGTON, D.C.

ORLA\_412918.1

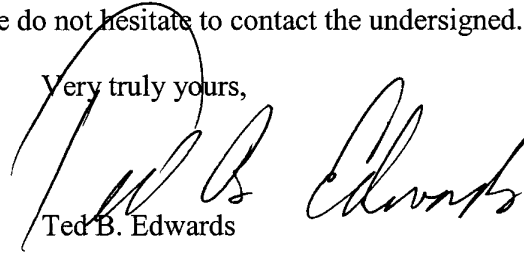
Mr. Steve Godfrey, P.E.

May 30, 2006

Page 2

Should you have any questions, please do not hesitate to contact the undersigned.

Very truly yours,

A handwritten signature in black ink, appearing to read "Ted B. Edwards", is written over the typed name. The signature is fluid and cursive.

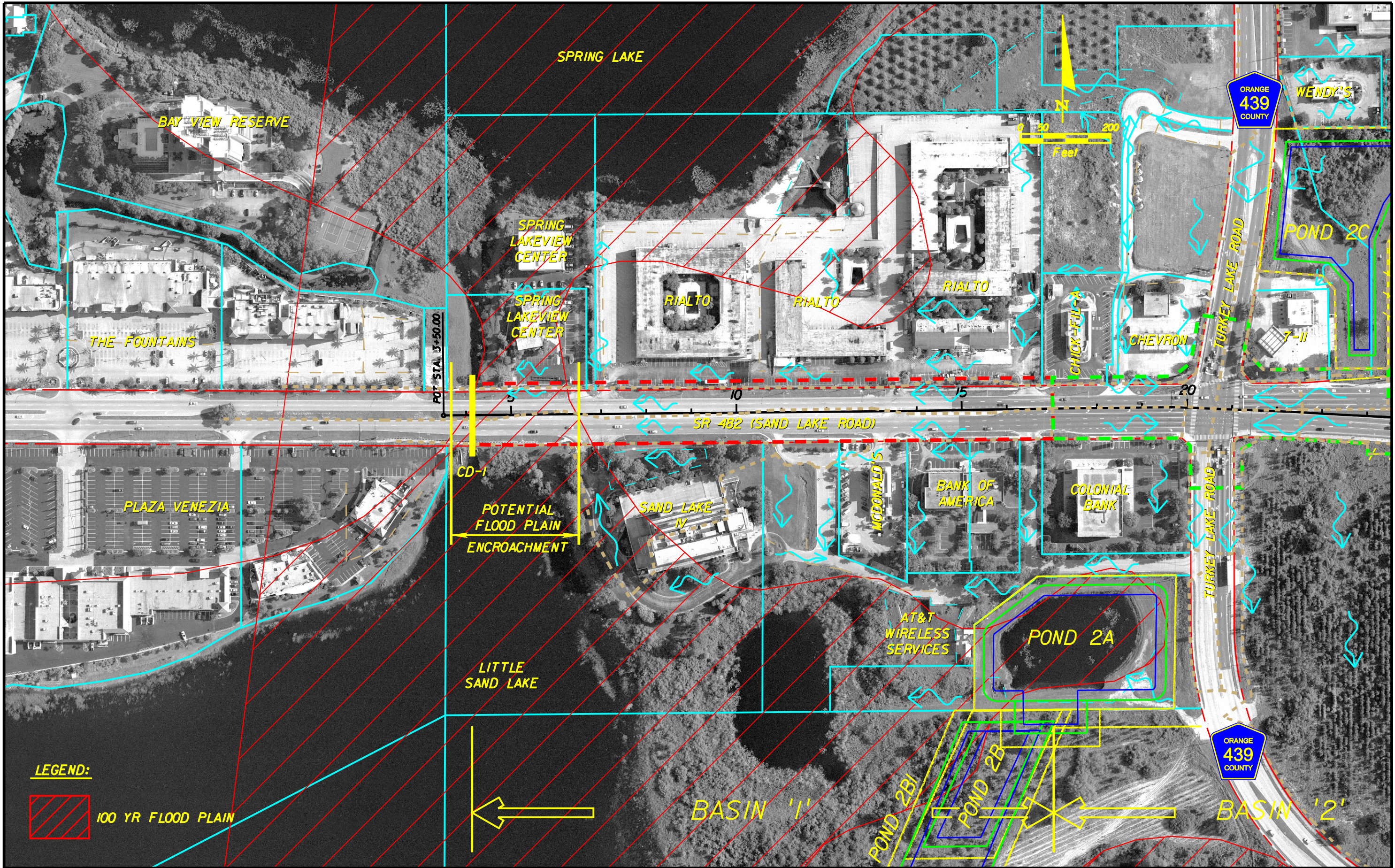
Ted B. Edwards

TBE:djm


cc: Mr. Joseph Day (via email)  
James Denapoli, Esq. (via email)  
Mr. Frank Lindrum (via email)  
Mr. Marc Watson (via email)  
Jeff Montgomery, Esq. (via email)  
Tom Percival, FDOT (via email)

# **APPENDIX D – DRAINAGE BASIN MAPS**





REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

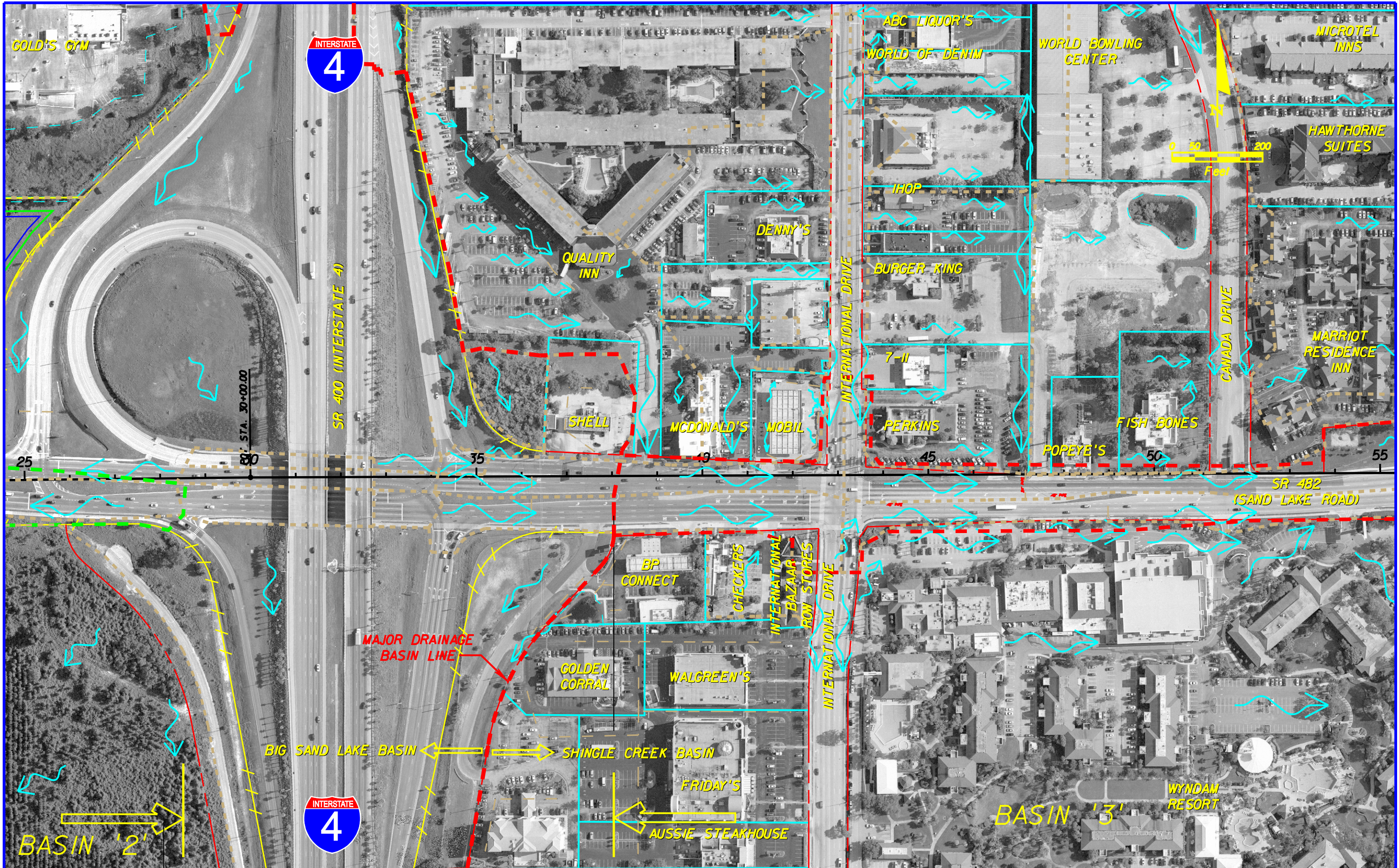
 Kimley-Horn and Associates, Inc.  
Certificate Of Authorization No. 696  
Steven G. Godfrey, P.E.  
P.E. License No. 18499  
3660 Maguire Boulevard, Suite 200  
Orlando, Florida 32803

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
482	ORANGE	407143-3-22-01

**BASIN MAP**

SHEET NO.
1






REVISIONS						<div><div></div><div>Kimley-Horn and Associates, Inc. Certificate Of Authorization No. 696</div><div>Steven G. Godfrey, P.E. P.E. License No. 18499 3660 Maguire Boulevard, Suite 200 Orlando, Florida 32803</div></div>	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			BASIN MAP	SHEET NO.  2
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
							482	ORANGE	407143-3-22-01		





REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION



Kimley-Horn and Associates, Inc.

Certificate Of Authorization No. 696

Steven G. Godfrey, P.E.

P.E. License No. 18499

3660 Maguire Boulevard, Suite 200

Orlando, Florida 32803

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
482	ORANGE	407143-3-22-01

BASIN MAP

SHEET NO.  
3

\$USERS\$

\$DATES\$

\$TIMES\$

\$FILES\$










REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION



Kimley-Horn and Associates, Inc.

Certificate Of Authorization No. 696

Steven G. Godfrey, P.E.

P.E. License No. 18499

3660 Maguire Boulevard, Suite 200

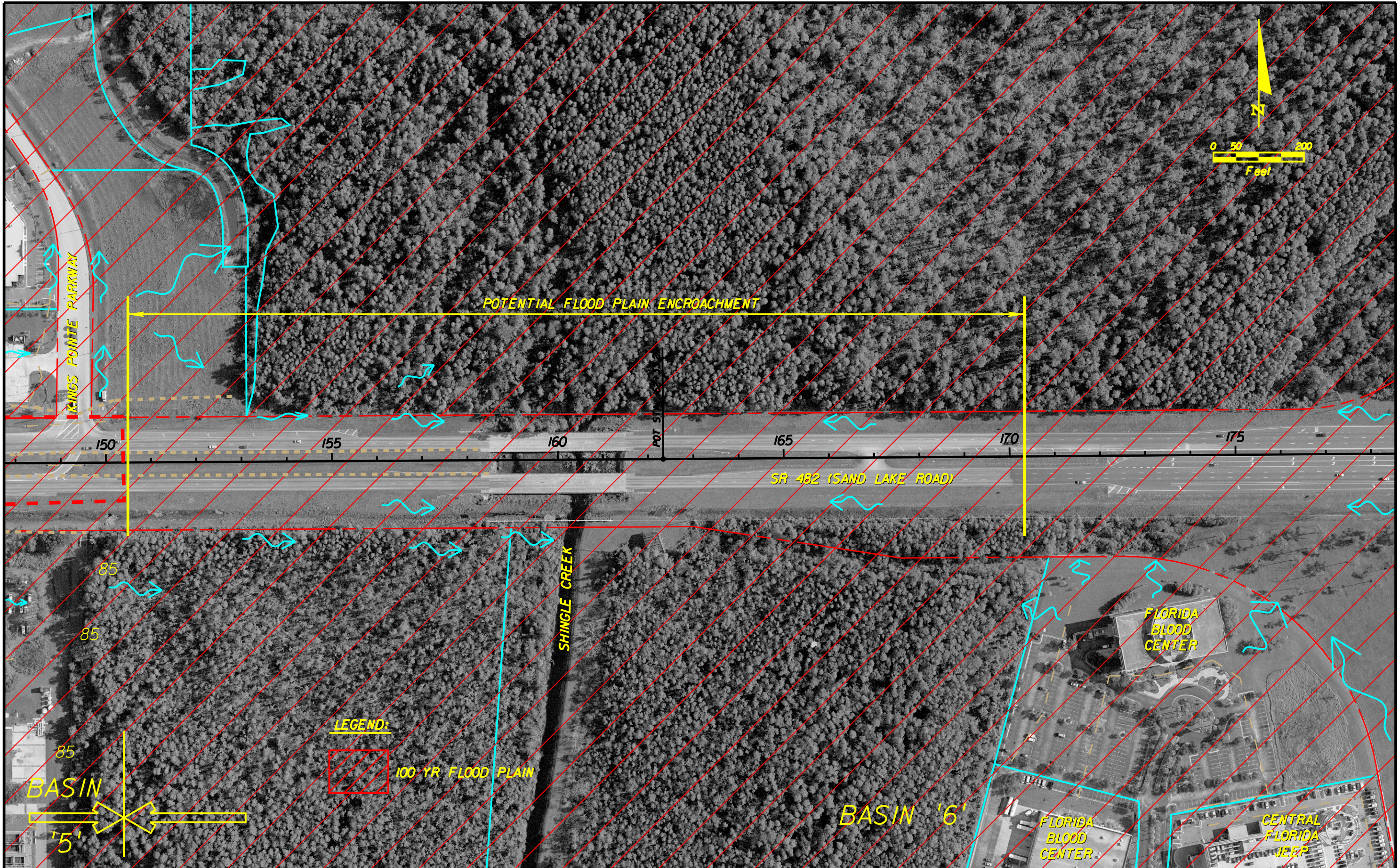
Orlando, Florida 32803

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
482	ORANGE	407143-3-22-01

BASIN MAP

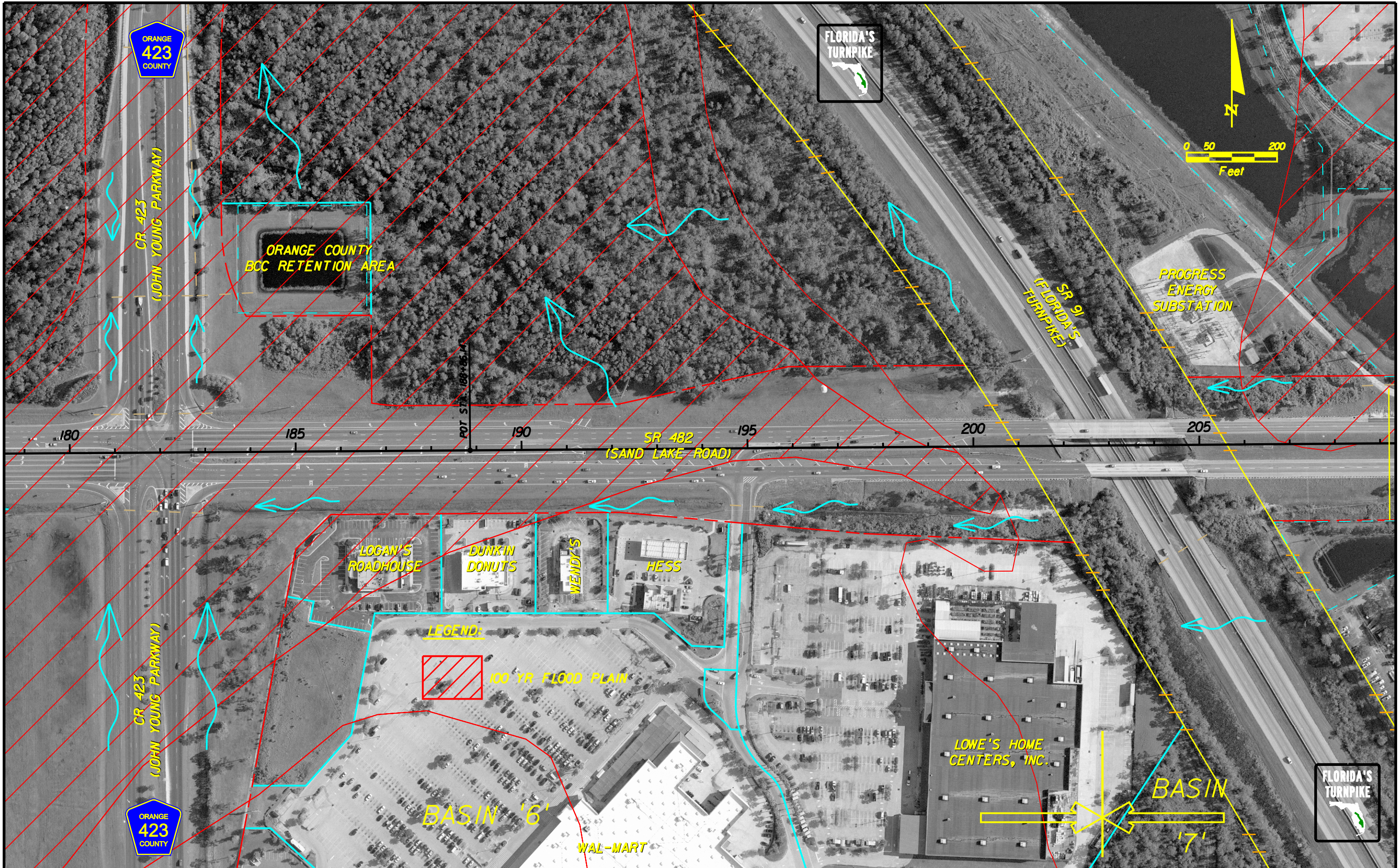
SHEET NO.  
5






REVISIONS						 Kimley-Horn and Associates, Inc. Certificate Of Authorization No. 696 Steven G. Godfrey, P.E. P.E. License No. 18499 3660 Maguire Boulevard, Suite 200 Orlando, Florida 32803	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			BASIN MAP	SHEET NO.
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
							482	ORANGE	407143-3-22-01		6





REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION



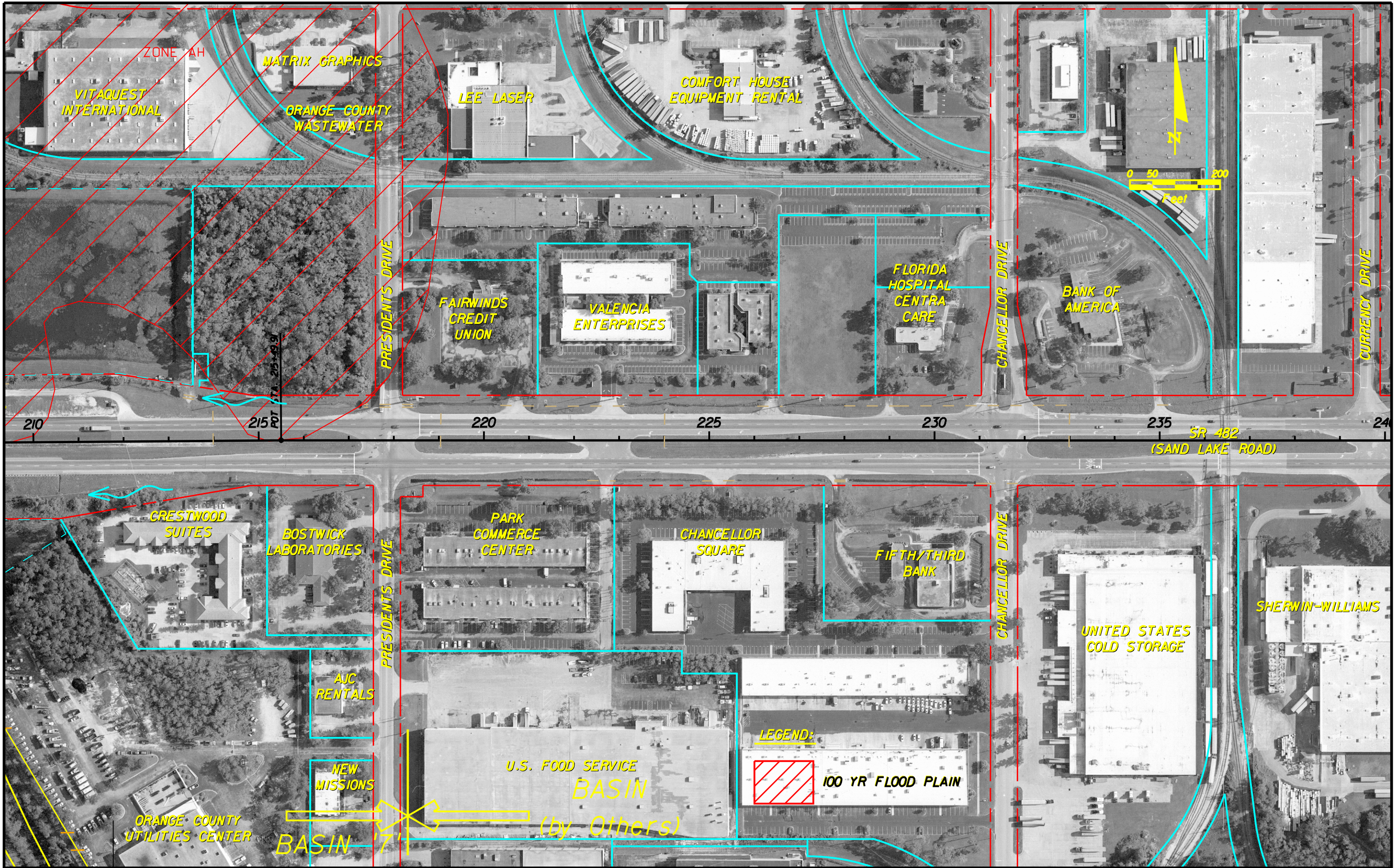
**Kimley-Horn and Associates, Inc.**  
Certificate Of Authorization No. 696  
Steven G. Godfrey, P.E.  
P.E. License No. 18499  
3660 Maguire Boulevard, Suite 200  
Orlando, Florida 32803

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
482	ORANGE	407143-3-22-01

**BASIN MAP**

SHEET NO.  
7



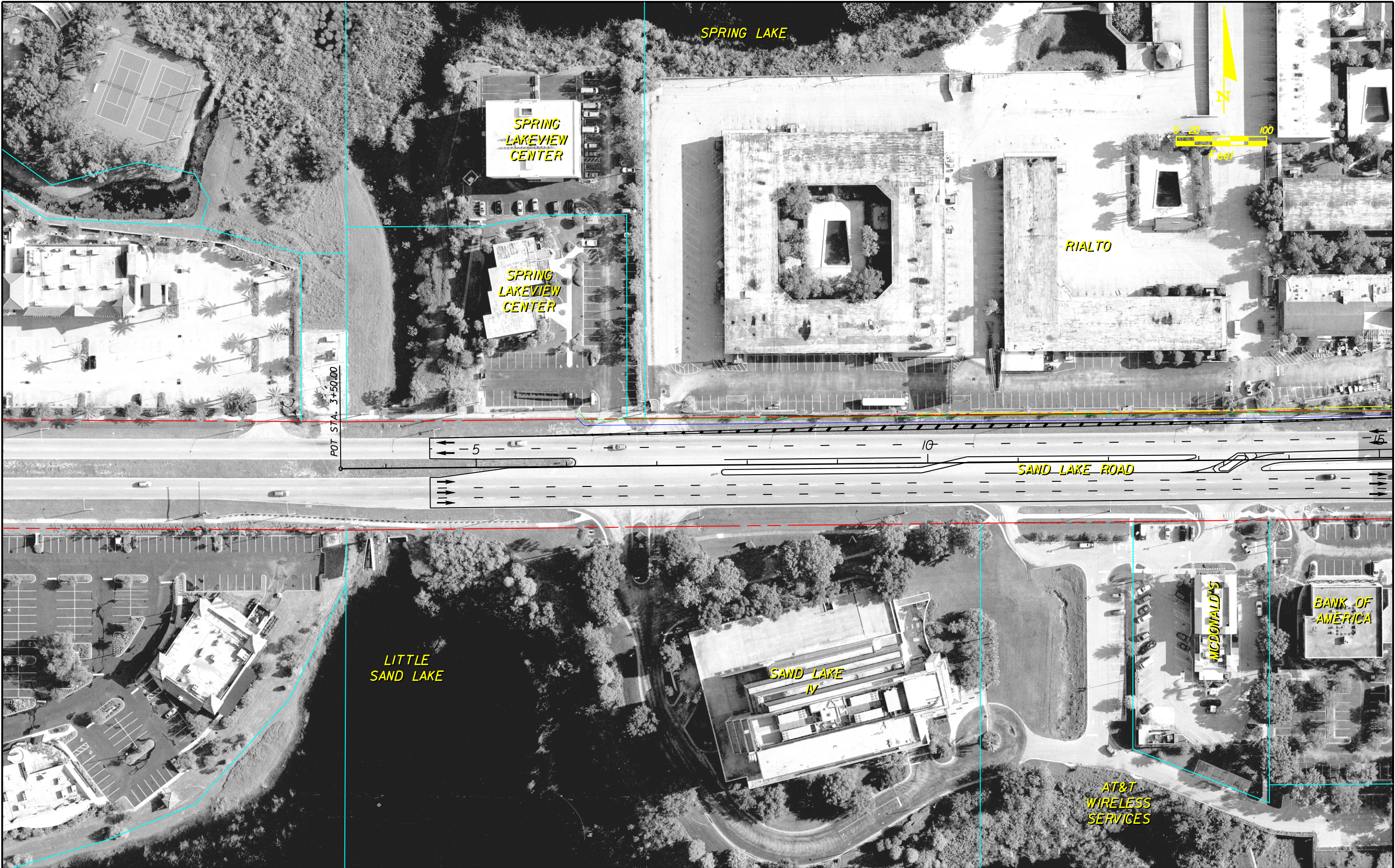


REVISIONS						<div><div></div><div>Kimley-Horn and Associates, Inc. Certificate Of Authorization No. 696 Steven G. Godfrey, P.E. P.E. License No. 18499 3660 Maguire Boulevard, Suite 200 Orlando, Florida 32803</div></div>	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			BASIN MAP	SHEET NO.  8
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
							482	ORANGE	407143-3-22-01		



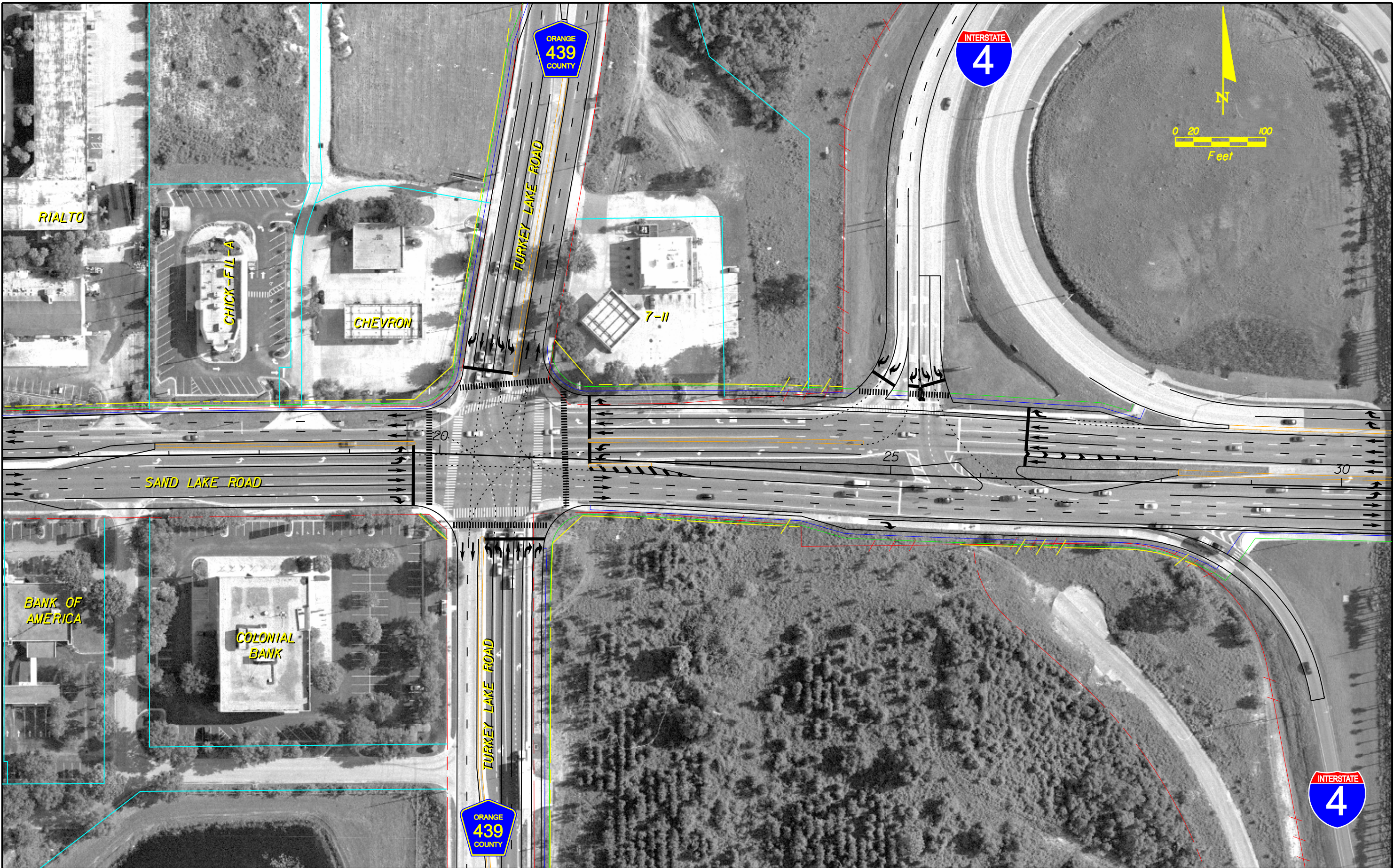
# **APPENDIX E – SR 482 WIDENING CONCEPT PLANS**






REVISIONS						<div>Kimley-Horn and Associates, Inc. Certificate of Authorization No. 696 Mr. Steven G. Godfrey P.E. License No. 18499 3660 Maguire Boulevard, Suite 200 Orlando, Florida 32803</div>	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			SR 482 WIDENING CONCEPT PLAN	SHEET NO.  1
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
							482	ORANGE	407143-3-22-01		





REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION



**Kimley-Horn and Associates, Inc.**  
Certificate Of Authorization No. 696  
Mr. Steven G. Godfrey  
P.E. License No. 18499  
3660 Maguire Boulevard, Suite 200  
Orlando, Florida 32803

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
482	ORANGE	407143-3-22-01

SR 482

WIDENING CONCEPT PLAN

SHEET NO.
2






REVISIONS						<div><b>Kimley-Horn and Associates, Inc.</b> Certificate Of Authorization No. 696 Mr. Steven G. Godfrey P.E. License No. 18499 3660 Maguire Boulevard, Suite 200 Orlando, Florida 32803</div>	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			SR 482 WIDENING CONCEPT PLAN	SHEET NO.  2a
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
							482	ORANGE	407143-3-22-01		





REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION



**Kimley-Horn and Associates, Inc.**  
Certificate of Authorization No. 696  
Mr. Steven G. Godfrey  
P.E. License No. 18499  
3660 Maguire Boulevard, Suite 200  
Orlando, Florida 32803

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
482	ORANGE	407143-3-22-01


**PREFERRED ALTERNATIVE**  
**PLAN VIEW**

SHEET NO.
2b





REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION



**Kimley-Horn and Associates, Inc.**  
Certificate of Authorization No. 696  
Mr. Steven G. Godfrey  
P.E. License No. 18499  
3660 Maguire Boulevard, Suite 200  
Orlando, Florida 32803

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
482	ORANGE	407143-3-22-01

SR 482

WIDENING CONCEPT PLAN

SHEET NO.
3





REVISIONS						<div><b>Kimley-Horn and Associates, Inc.</b> Certificate of Authorization No. 696 Mr. Steven G. Godfrey P.E. License No. 18499 3660 Maguire Boulevard, Suite 200 Orlando, Florida 32803</div>	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			SR 482 WIDENING CONCEPT PLAN	SHEET NO. 3a
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
							482	ORANGE	407143-3-22-01		





R E V I S I O N S						 <div>Kimley-Horn and Associates, Inc. Certificate Of Authorization No. 696  Mr. Steven G. Godfrey P.E. License No. 18499 3660 Maguire Boulevard, Suite 200 Orlando, Florida 32803</div>	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			SR 482  WIDENING CONCEPT PLAN	SHEET NO.
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		3b
							482	ORANGE	407143-3-22-01		





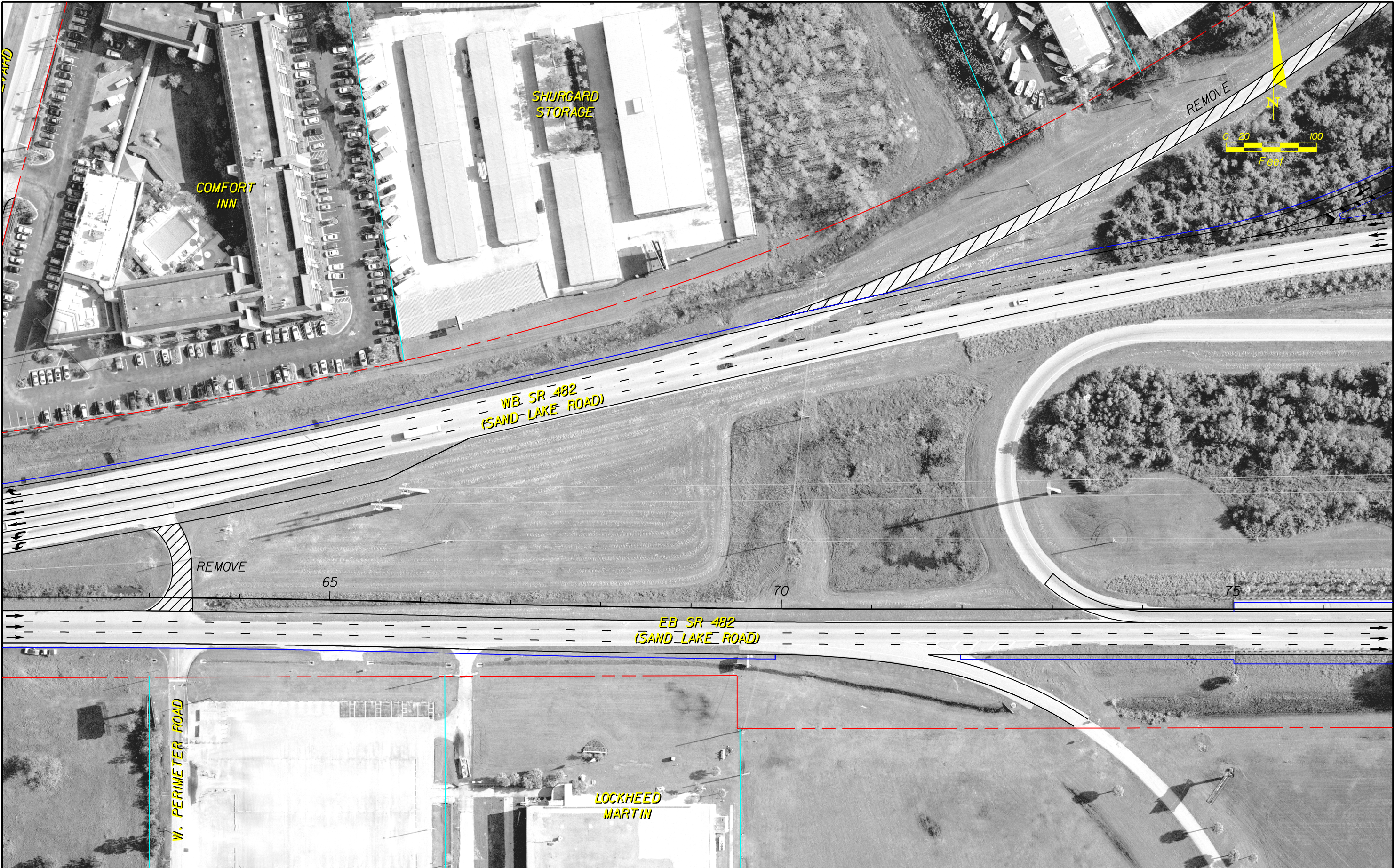
REVISIONS						 <b>Kimley-Horn and Associates, Inc.</b> Certificate of Authorization No. 696 Mr. Steven G. Godfrey P.E. License No. 18499 3660 Maguire Boulevard, Suite 200 Orlando, Florida 32803	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			SR 482 WIDENING CONCEPT PLAN	SHEET NO.  4
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
							482	ORANGE	407143-3-22-01		






REVISIONS						<div><b>Kimley-Horn and Associates, Inc.</b> Certificate Of Authorization No. 696 Mr. Steven G. Godfrey P.E. License No. 18499 3660 Maguire Boulevard, Suite 200 Orlando, Florida 32803</div>	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			SR 482 WIDENING CONCEPT PLAN	SHEET NO.  4a
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
							482	ORANGE	407143-3-22-01		





REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION



**Kimley-Horn and Associates, Inc.**  
Certificate of Authorization No. 696  
Mr. Steven G. Godfrey  
P.E. License No. 18499  
3660 Maguire Boulevard, Suite 200  
Orlando, Florida 32803

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
482	ORANGE	407143-3-22-01

**SR 482**  
**WIDENING CONCEPT PLAN**

SHEET NO.
5






R E V I S I O N S						 <div>Kimley-Horn and Associates, Inc. Certificate Of Authorization No. 696  Mr. Steven G. Godfrey P.E. License No. 18499 3660 Maguire Boulevard, Suite 200 Orlando, Florida 32803</div>	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			SR 482  WIDENING CONCEPT PLAN	SHEET NO.
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
							482	ORANGE	407143-3-22-01		





REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION



**Kimley-Horn and Associates, Inc.**  
Certificate Of Authorization No. 696  
Mr. Steven G. Godfrey  
P.E. License No. 18499  
3660 Maguire Boulevard, Suite 200  
Orlando, Florida 32803

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
482	ORANGE	407143-3-22-01

SR 482

WIDENING CONCEPT PLAN

SHEET NO.
6A





REVISIONS						 <div>Kimley-Horn and Associates, Inc. Certificate of Authorization No. 696 Mr. Steven G. Godfrey P.E. License No. 18499 3660 Maguire Boulevard, Suite 200 Orlando, Florida 32803</div>	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			SR 482 WIDENING CONCEPT PLAN (STAGE 1)	SHEET NO.  7-1
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
							482	ORANGE	407143-3-22-01		





REVISIONS						<div><b>Kimley-Horn and Associates, Inc.</b> Certificate of Authorization No. 696 Mr. Steven G. Godfrey P.E. License No. 18499 3660 Maguire Boulevard, Suite 200 Orlando, Florida 32803</div>	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			SR 482 WIDENING CONCEPT PLAN (STAGE 2)	SHEET NO.  7-2
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
							482	ORANGE	407143-3-22-01		





R E V I S I O N S						 <div>Kimley-Horn and Associates, Inc. Certificate Of Authorization No. 696  Mr. Steven G. Godfrey P.E. License No. 18499 3660 Maguire Boulevard, Suite 200 Orlando, Florida 32803</div>	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			SR 482 WIDENING CONCEPT PLAN (STAGE 1)	SHEET NO.
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		8-1
							482	ORANGE	407143-3-22-01		





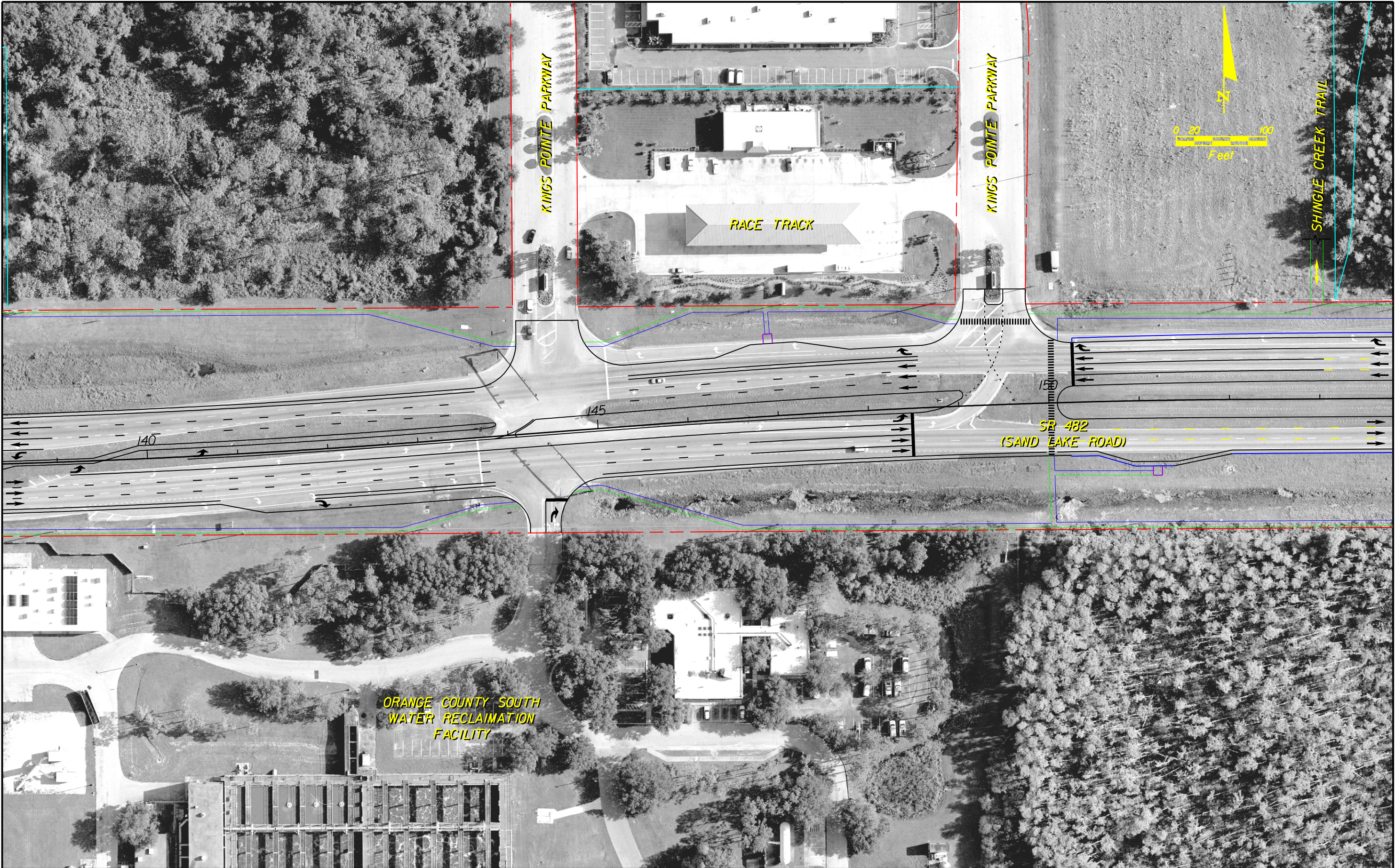
R E V I S I O N S						 <div>Kimley-Horn and Associates, Inc. Certificate Of Authorization No. 696  Mr. Steven G. Godfrey P.E. License No. 18499 3660 Maguire Boulevard, Suite 200 Orlando, Florida 32803</div>	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			SR 482  WIDENING CONCEPT PLAN  (STAGE 2)	SHEET NO.
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		8-2
							482	ORANGE	407143-3-22-01		





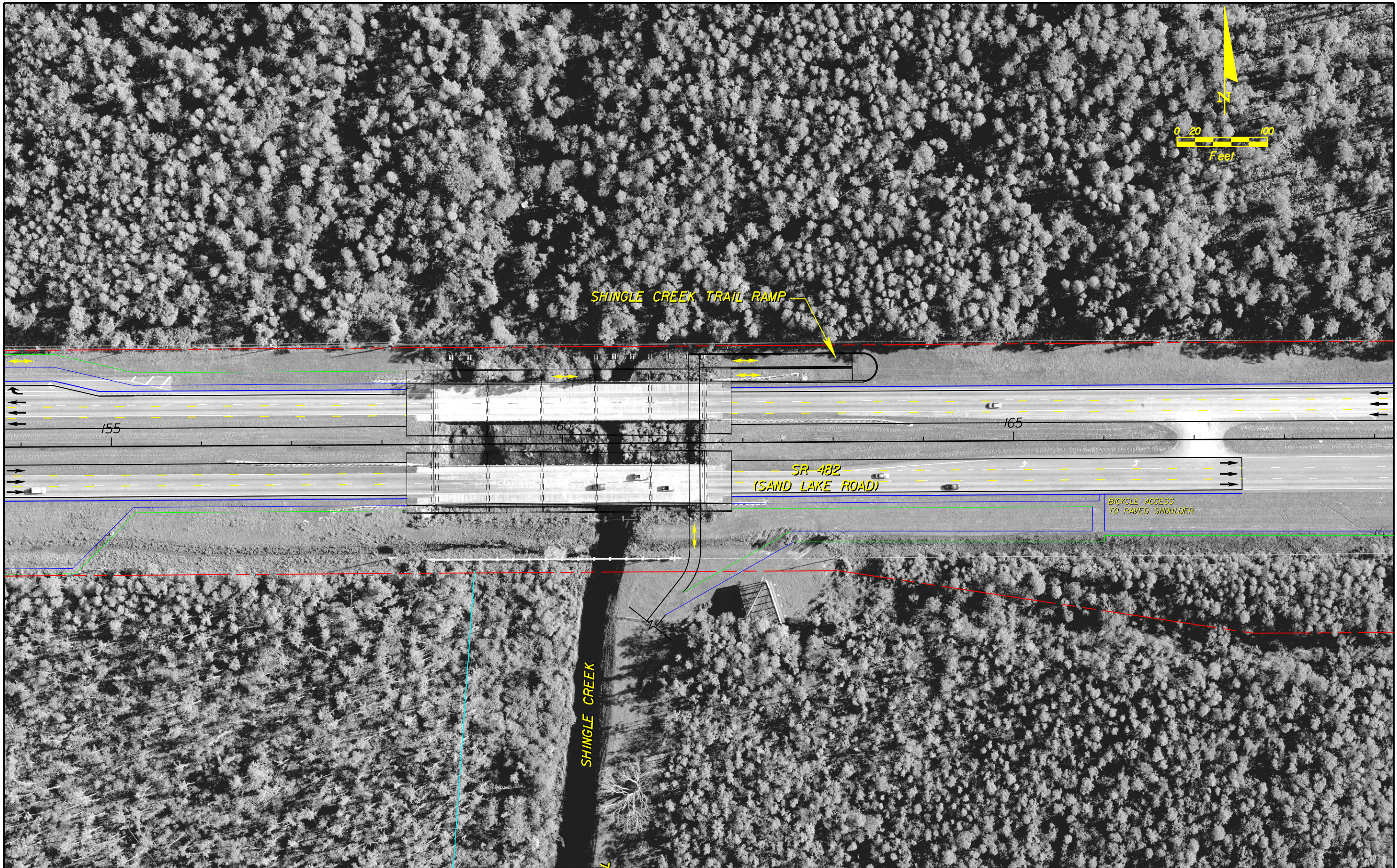
R E V I S I O N S						 <div>Kimley-Horn and Associates, Inc. Certificate Of Authorization No. 696 Mr. Steven G. Godfrey P.E. License No. 18499 3660 Maguire Boulevard, Suite 200 Orlando, Florida 32803</div>	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			SR 482 WIDENING CONCEPT PLAN	SHEET NO.
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		9
							482	ORANGE	407143-3-22-01		





R E V I S I O N S						 <div>Kimley-Horn and Associates, Inc. Certificate Of Authorization No. 696 Mr. Steven G. Godfrey P.E. License No. 18499 3660 Maguire Boulevard, Suite 200 Orlando, Florida 32803</div>	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			SR 482 WIDENING CONCEPT PLAN	SHEET NO.
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		10
							482	ORANGE	407143-3-22-01		






R E V I S I O N S						 Kimley-Horn and Associates, Inc. Certificate Of Authorization No. 696 Mr. Steven G. Godfrey P.E. License No. 18499 3660 Maguire Boulevard, Suite 200 Orlando, Florida 32803	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			SR 482 WIDENING CONCEPT PLAN	SHEET NO.
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		11
							482	ORANGE	407143-3-22-01		





REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION



**Kimley-Horn and Associates, Inc.**  
Certificate Of Authorization No. 696  
Mr. Steven G. Godfrey  
P.E. License No. 18499  
3660 Maguire Boulevard, Suite 200  
Orlando, Florida 32803

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
482	ORANGE	407143-3-22-01

SR 482

WIDENING CONCEPT PLAN

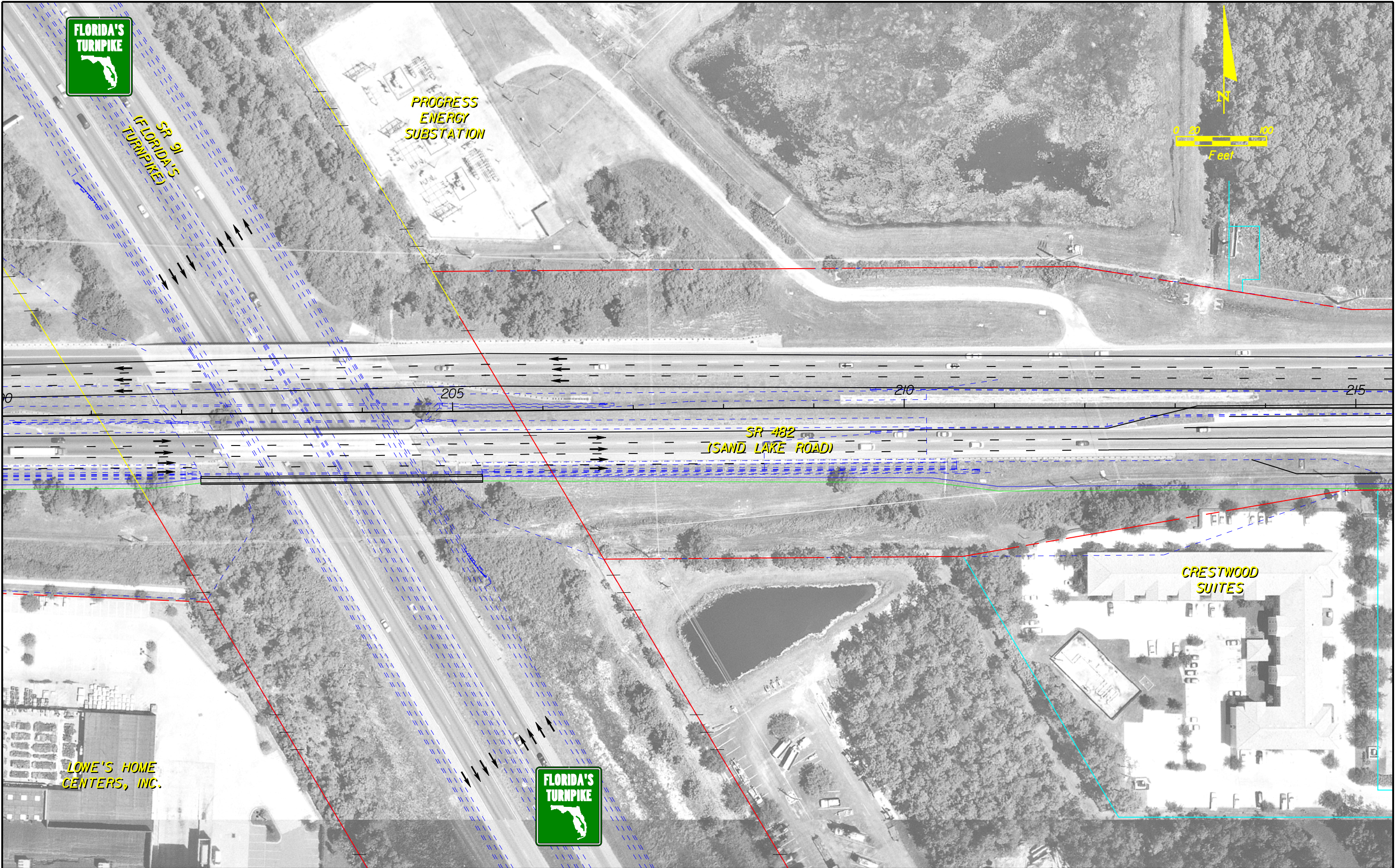
SHEET NO.
12






R E V I S I O N S						 <b>Kimley-Horn and Associates, Inc.</b> Certificate Of Authorization No. 696  Mr. Steven G. Godfrey P.E. License No. 18499 3660 Maguire Boulevard, Suite 200 Orlando, Florida 32803	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			SR 482 WIDENING CONCEPT PLAN	SHEET NO.
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		13
							482	ORANGE	407143-3-22-01		





REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION



**Kimley-Horn and Associates, Inc.**  
Certificate Of Authorization No. 696  
Mr. Steven G. Godfrey  
P.E. License No. 18499  
3660 Maguire Boulevard, Suite 200  
Orlando, Florida 32803

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
482	ORANGE	407143-3-22-01

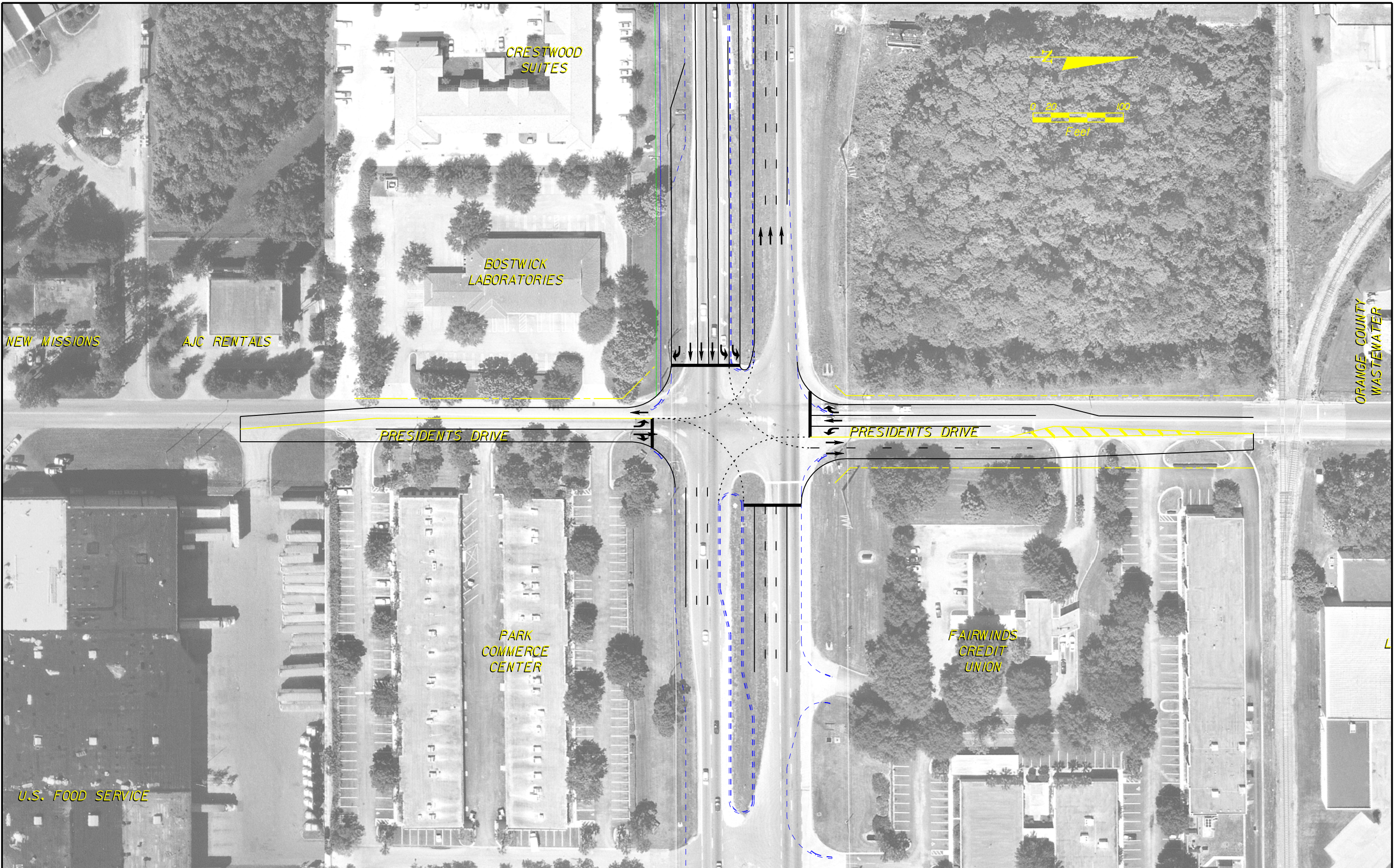
SR 482

WIDENING CONCEPT PLAN

SHEET NO.

14





R E V I S I O N S						 <b>Kimley-Horn and Associates, Inc.</b> Certificate Of Authorization No. 696  Mr. Steven G. Godfrey P.E. License No. 18499 3660 Maguire Boulevard, Suite 200 Orlando, Florida 32803	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			SR 482 WIDENING CONCEPT PLAN	SHEET NO.
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		15
							482	ORANGE	407143-3-22-01		



# **APPENDIX F – STORAGE LENGTH TABLES**

## RECOMMENDED STORAGE LENGTH

**INTERSECTION SR 482 @ Turkey Lake Road**

**DESIGN YEAR 2030 Design Hour - Build Condition**

Street Name	Movement	Volume (Veh/Hr)	G/C	Cycle Length (Sec)	Number of Lanes	Per-Lane Volume (VPHPL)	Percent Trucks	Adjustment Factor	Calc'd Queue Length (Ft)	Rec'd Queue Length (Ft)
SR 482	EB Left	330	0.13	160.0	2	165	2.0%	1.50	244.0	250
	EB Thru	2100	0.42	160.0	3	700	3.0%	1.50	697.0	700
	EB Right	530	0.62	160.0	1	530	2.0%	1.50	342.4	350
SR 482	WB Left	350	0.13	160.0	2	175	2.0%	1.50	258.8	275
	WB Thru	2650	0.42	160.0	3	883	3.0%	1.50	879.5	900
	WB Right	1050	0.62	160.0	1	1,050	2.0%	1.50	678.3	700
Turkey Lake Road	NB Left	840	0.17	160.0	2	420	2.0%	1.50	592.6	600
	NB Thru	910	0.16	160.0	2	455	2.0%	1.50	649.7	650
	NB Right	790	0.32	160.0	2	395	2.0%	1.50	456.6	475
Turkey Lake Road	SB Left	700	0.17	160.0	2	350	2.0%	1.50	493.9	500
	SB Thru	610	0.16	160.0	2	305	2.0%	1.50	435.5	450
	SB Right	250	0.32	160.0	1	250	2.0%	1.50	289.0	300

Storage Length calculation based on Optimized Signal Timing

Storage Lengths are calculated based on the following formula:

$$L = (25) (DHV) (1-G/C) (T+1) (F) / (3600/C) / (N)$$

where: L = storage length

DHV = design hour volume, in vph

G/C = ratio of green time to cycle length

T = percent of heavy vehicles

F = adjustment factor (1.25 to 2)

C = cycle length

N = # of lanes



## RECOMMENDED STORAGE LENGTH

**INTERSECTION SR 482 @ I-4 Westbound Off-Ramp**

**DESIGN YEAR 2030 Design Hour - Build Condition**

Street Name	Movement	Volume (Veh/Hr)	G/C	Cycle Length (Sec)	Number of Lanes	Per-Lane Volume (VPHPL)	Percent Trucks	Adjustment Factor	Calc'd Queue Length (Ft)	Rec'd Queue Length (Ft)
SR 482	EB Left				0					
	EB Thru	3400	0.56	110.0	3	1,133	3.0%	1.50	588.5	600
	EB Right				0					
SR 482	WB Left				0					
	WB Thru	2900	0.56	110.0	3	967	3.0%	1.50	502.0	525
	WB Right				0					
N / A	NB Left				0					
	NB Thru				0					
	NB Right				0					
I-4 Westbound Off-Ramp	SB Left	510	0.35	110.0	2	255	2.0%	1.50	193.7	200
	SB Thru				0					
	SB Right	1350	0.35	110.0	2	675	2.0%	1.50	512.8	525

Storage Length calculation based on Optimized Signal Timing

Storage Lengths are calculated based on the following formula:

$$L = (25) (DHV) (1-G/C) (T+1) (F) / (3600/C) / (N)$$

where: L = storage length

DHV = design hour volume, in vph

G/C = ratio of green time to cycle length

T = percent of heavy vehicles

F = adjustment factor (1.25 to 2)

C = cycle length

N = # of lanes

Build\_Storage\_Length

## RECOMMENDED STORAGE LENGTH

**INTERSECTION SR 482 @ I-4 Eastbound On/Off-Ramps**

**DESIGN YEAR 2030 Design Hour - Build Condition**

Street Name	Movement	Volume (Veh/Hr)	G/C	Cycle Length (Sec)	Number of Lanes	Per-Lane Volume (VPHPL)	Percent Trucks	Adjustment Factor	Calc'd Queue Length (Ft)	Rec'd Queue Length (Ft)
SR 482	EB Left	1050	0.23	120.0	2	525	2.0%	1.50	515.4	525
	EB Thru	1950	0.56	120.0	3	650	3.0%	1.50	368.2	375
	EB Right				0					
SR 482	WB Left				0					
	WB Thru	1750	0.28	120.0	3	583	3.0%	1.50	540.8	550
	WB Right	840	0.28	120.0	2	420	2.0%	1.50	385.6	400
I-4 Eastbound Off-Ramp	NB Left	1300	0.36	120.0	2	650	2.0%	1.50	530.4	550
	NB Thru				0					
	NB Right	1200	0.36	120.0	2	600	0.0%	1.50	480.0	500
I-4 Eastbound On-Ramp	SB Left				0					
	SB Thru				0					
	SB Right				0					

Storage Length calculation based on Optimized Signal Timing

Storage Lengths are calculated based on the following formula:

$$L = (25) (DHV) (1-G/C) (T+1) (F) / (3600/C) / (N)$$

where: L = storage length

DHV = design hour volume, in vph

G/C = ratio of green time to cycle length

T = percent of heavy vehicles

F = adjustment factor (1.25 to 2)

C = cycle length

N = # of lanes

Build\_Storage\_Length

## RECOMMENDED STORAGE LENGTH

**INTERSECTION SR 482 @ International Drive**

**DESIGN YEAR 2030 Design Hour - Build Condition**

Street Name	Movement	Volume (Veh/Hr)	G/C	Cycle Length (Sec)	Number of Lanes	Per-Lane Volume (VPHPL)	Percent Trucks	Adjustment Factor	Calc'd Queue Length (Ft)	Rec'd Queue Length (Ft)
SR 482	EB Left	490	0.14	140.0	2	245	2.0%	1.50	313.4	325
	EB Thru	2350	0.37	140.0	3	783	3.0%	1.50	741.3	750
	EB Right	1250	0.58	140.0	2	625	2.0%	1.50	390.5	400
SR 482	WB Left	420	0.13	140.0	2	210	2.0%	1.50	271.8	275
	WB Thru	2000	0.37	140.0	3	667	3.0%	1.50	630.9	650
	WB Right	190	0.60	140.0	1	190	2.0%	1.50	113.1	125
International Drive	NB Left	880	0.20	140.0	2	440	2.0%	1.50	523.6	525
	NB Thru	1190	0.19	140.0	2	595	2.0%	1.50	716.9	725
	NB Right	350	0.36	140.0	1	350	2.0%	1.50	333.2	350
International Drive	SB Left	210	0.19	140.0	1	210	2.0%	1.50	253.0	275
	SB Thru	910	0.19	140.0	2	455	2.0%	1.50	548.2	550
	SB Right	470	0.35	140.0	1	470	2.0%	1.50	454.4	475

Storage Length calculation based on Optimized Signal Timing

Storage Lengths are calculated based on the following formula:

$$L = (25) (DHV) (1-G/C) (T+1) (F) / (3600/C) / (N)$$

where: L = storage length

DHV = design hour volume, in vph

G/C = ratio of green time to cycle length

T = percent of heavy vehicles

F = adjustment factor (1.25 to 2)

C = cycle length

N = # of lanes



## RECOMMENDED STORAGE LENGTH

**INTERSECTION SR 482 @ Universal Blvd**

**DESIGN YEAR 2030 Design Hour - Build Condition**

Street Name	Movement	Volume (Veh/Hr)	G/C	Cycle Length (Sec)	Number of Lanes	Per-Lane Volume (VPHPL)	Percent Trucks	Adjustment Factor	Calc'd Queue Length (Ft)	Rec'd Queue Length (Ft)
SR 482	EB Left	330	0.16	130.0	2	165	2.0%	1.50	191.4	200
	EB Thru	2200	0.40	130.0	3	733	3.0%	1.50	613.7	625
	EB Right	390	0.51	130.0	1	390	2.0%	1.50	264.0	275
SR 482	WB Left	670	0.15	130.0	2	335	2.0%	1.50	393.3	400
	WB Thru	2000	0.40	130.0	3	667	3.0%	1.50	557.9	575
	WB Right	440	0.52	130.0	1	440	2.0%	1.50	291.7	300
Universal Boulevard	NB Left	390	0.10	130.0	2	195	2.0%	1.50	242.4	250
	NB Thru	1150	0.23	130.0	2	575	2.0%	1.50	611.5	625
	NB Right	740	0.43	130.0	1	740	2.0%	1.50	582.6	600
Universal Boulevard	SB Left	300	0.08	130.0	2	150	2.0%	1.50	190.6	200
	SB Thru	910	0.23	130.0	2	455	2.0%	1.50	483.9	500
	SB Right	260	0.42	130.0	1	260	2.0%	1.50	208.3	225

Storage Length calculation based on Optimized Signal Timing

Storage Lengths are calculated based on the following formula:

$$L = (25) (DHV) (1-G/C) (T+1) (F) / (3600/C) / (N)$$

where: L = storage length

DHV = design hour volume, in vph

G/C = ratio of green time to cycle length

T = percent of heavy vehicles

F = adjustment factor (1.25 to 2)

C = cycle length

N = # of lanes

## RECOMMENDED STORAGE LENGTH

**INTERSECTION SR 482 @ Greenbriar Pkwy**

**DESIGN YEAR 2030 Design Hour - Build Condition**

Street Name	Movement	Volume (Veh/Hr)	G/C	Cycle Length (Sec)	Number of Lanes	Per-Lane Volume (VPHPL)	Percent Trucks	Adjustment Factor	Calc'd Queue Length (Ft)	Rec'd Queue Length (Ft)
SR 482	EB Left	90	0.08	100.0	1	90	2.0%	1.50	88.0	100
	EB Thru	3850	0.82	100.0	3	1,283	3.0%	1.50	247.8	250
	EB Right	0	0.00	100.0	0					
SR 482	WB Left	0	0.00	100.0	0					
	WB Thru	4200	0.71	100.0	3	1,400	3.0%	1.50	435.6	450
	WB Right	180	0.71	100.0	1	180	2.0%	1.50	55.5	75
Greenbriar Parkway	NB Left	0	0.00	100.0	0					
	NB Thru	0	0.00	100.0	0					
	NB Right	0	0.00	100.0	0					
Greenbriar Parkway	SB Left	320	0.10	100.0	1	320	2.0%	1.50	306.0	325
	SB Thru	0	0.00	100.0	0					
	SB Right	130	0.21	100.0	1	130	2.0%	1.50	109.1	125

Storage Length calculation based on Optimized Signal Timing

Storage Lengths are calculated based on the following formula:

$$L = (25) (DHV) (1-G/C) (T+1) (F) / (3600/C) / (N)$$

where: L = storage length

DHV = design hour volume, in vph

G/C = ratio of green time to cycle length

T = percent of heavy vehicles

F = adjustment factor (1.25 to 2)

C = cycle length

N = # of lanes

## RECOMMENDED STORAGE LENGTH

**INTERSECTION SR 482 @ Mandarin Dr**

**DESIGN YEAR 2030 Design Hour - Build Condition**

Street Name	Movement	Volume (Veh/Hr)	G/C	Cycle Length (Sec)	Number of Lanes	Per-Lane Volume (VPHPL)	Percent Trucks	Adjustment Factor	Calc'd Queue Length (Ft)	Rec'd Queue Length (Ft)
SR 482	EB Left	110	0.09	100.0	1	110	2.0%	1.50	106.4	125
	EB Thru	3850	0.79	100.0	3	1,283	3.0%	1.50	289.2	300
	EB Right	0	0.00	100.0	0					
SR 482	WB Left	0	0.00	100.0	0					
	WB Thru	3700	0.67	100.0	3	1,233	3.0%	1.50	436.7	450
	WB Right	440	0.67	100.0	1	440	2.0%	1.50	154.3	175
Mandarin Drive	NB Left	0	0.00	100.0	0					
	NB Thru	0	0.00	100.0	0					
	NB Right	0	0.00	100.0	0					
Mandarin Drive	SB Left	190	0.13	100.0	1	190	2.0%	1.50	175.6	200
	SB Thru	0	0.00	100.0	0					
	SB Right	120	0.25	100.0	1	120	2.0%	1.50	95.6	100

Storage Length calculation based on Optimized Signal Timing

Storage Lengths are calculated based on the following formula:

$$L = (25) (DHV) (1-G/C) (T+1) (F) / (3600/C) / (N)$$

where: L = storage length

DHV = design hour volume, in vph

G/C = ratio of green time to cycle length

T = percent of heavy vehicles

F = adjustment factor (1.25 to 2)

C = cycle length

N = # of lanes



## RECOMMENDED STORAGE LENGTH

**INTERSECTION SR 482 @ Kingspointe Pkwy**  
**DESIGN YEAR 2030 Design Hour - Build Condition**

Street Name	Movement	Volume (Veh/Hr)	G/C	Cycle Length (Sec)	Number of Lanes	Per-Lane Volume (VPHPL)	Percent Trucks	Adjustment Factor	Calc'd Queue Length (Ft)	Rec'd Queue Length (Ft)
SR 482	EB Left	330	0.19	140.0	1	330	2.0%	1.50	397.6	400
	EB Thru	3350	0.80	140.0	3	1,117	3.0%	1.50	335.5	350
	EB Right	10	0.79	140.0	1	10	2.0%	1.50	3.1	50
SR 482	WB Left	10	0.56	140.0	1	10	2.0%	1.50	6.5	50
	WB Thru	3410	0.58	140.0	3	1,137	3.0%	1.50	717.1	725
	WB Right	110	0.58	140.0	1	110	2.0%	1.50	68.7	75
Kingspointe Parkway	NB Left	10	0.14	140.0	1	10	2.0%	1.50	12.8	50
	NB Thru	0	0.12	140.0	1	0	2.0%	1.50	0.0	50
	NB Right	10	0.12	140.0	1	10	2.0%	1.50	13.1	50
Kingspointe Parkway	SB Left	330	0.12	140.0	1	330	2.0%	1.50	432.0	450
	SB Thru	0	0.12	140.0	1	0	2.0%	1.50	0.0	50
	SB Right	440	0.34	140.0	1	440	2.0%	1.50	432.0	450

Storage Length calculation based on Optimized Signal Timing

Storage Lengths are calculated based on the following formula:

$$L = (25) (DHV) (1-G/C) (T+1) (F) / (3600/C) / (N)$$

where: L = storage length

DHV = design hour volume, in vph

G/C = ratio of green time to cycle length

T = percent of heavy vehicles

F = adjustment factor (1.25 to 2)

C = cycle length

N = # of lanes

## RECOMMENDED STORAGE LENGTH

**INTERSECTION SR 482 @ John Young Parkway**  
**DESIGN YEAR 2030 Design Hour - Build Condition**

Street Name	Movement	Volume (Veh/Hr)	G/C	Cycle Length (Sec)	Number of Lanes	Per-Lane Volume (VPHPL)	Percent Trucks	Adjustment Factor	Calc'd Queue Length (Ft)	Rec'd Queue Length (Ft)
SR 482	EB Left	630	0.20	140.0	2	315	2.0%	1.50	374.9	375
	EB Thru	2520	0.42	140.0	3	840	3.0%	1.50	731.8	750
	EB Right	1000	0.67	140.0	1	1,000	2.0%	1.50	490.9	500
SR 482	WB Left	1240	0.26	140.0	2	620	2.0%	1.50	682.5	700
	WB Thru	2850	0.49	140.0	3	950	3.0%	1.50	727.8	750
	WB Right	830	0.76	140.0	1	830	2.0%	1.50	296.3	300
John Young Parkway	NB Left	1180	0.25	140.0	2	590	2.0%	1.50	658.2	675
	NB Thru	0	0.00	140.0	3	0	2.0%	1.50	0.0	50
	NB Right	750	0.28	140.0	1	750	2.0%	1.50	803.3	825
John Young Parkway	SB Left	1080	0.23	140.0	2	540	2.0%	1.50	618.5	625
	SB Thru	0	0.00	140.0	3	0	2.0%	1.50	0.0	50
	SB Right	350	0.19	140.0	1	350	2.0%	1.50	421.7	425

Storage Length calculation based on Optimized Signal Timing

Storage Lengths are calculated based on the following formula:

$$L = (25) (DHV) (1-G/C) (T+1) (F) / (3600/C) / (N)$$

where: L = storage length

DHV = design hour volume, in vph

G/C = ratio of green time to cycle length

T = percent of heavy vehicles

F = adjustment factor (1.25 to 2)

C = cycle length

N = # of lanes

## RECOMMENDED STORAGE LENGTH

**INTERSECTION SR 482 @ Presidents Drive**

**DESIGN YEAR 2030 Design Hour - Build Condition**

Street Name	Movement	Volume (Veh/Hr)	G/C	Cycle Length (Sec)	Number of Lanes	Per-Lane Volume (VPHPL)	Percent Trucks	Adjustment Factor	Calc'd Queue Length (Ft)	Rec'd Queue Length (Ft)
SR 482	EB Left	450	0.11	120.0	2	225	2.0%	1.50	255.3	275
	EB Thru	3230	0.65	120.0	3	1,077	3.0%	1.50	485.2	500
	EB Right	330	0.63	120.0	1	330	2.0%	1.50	155.7	175
SR 482	WB Left	100	0.09	120.0	1	100	2.0%	1.50	116.0	125
	WB Thru	4930	0.65	120.0	3	1,643	3.0%	1.50	740.5	750
	WB Right	150	0.65	120.0	1	150	2.0%	1.50	66.9	75
Presidents Drive	NB Left	320	0.17	120.0	1	320	2.0%	1.50	338.6	350
	NB Thru & Right	270	0.15	120.0	1	270	2.0%	1.50	292.6	300
Presidents Drive	SB Left	130	0.15	120.0	1	130	2.0%	1.50	140.9	150
	SB Thru	200	0.15	120.0	1	200	2.0%	1.50	216.8	225
	SB Right	350	0.28	120.0	1	350	2.0%	1.50	321.3	325

Storage Length calculation based on Optimized Signal Timing

Storage Lengths are calculated based on the following formula:

$$L = (25) (DHV) (1-G/C) (T+1) (F) / (3600/C) / (N)$$

where: L = storage length

DHV = design hour volume, in vph

G/C = ratio of green time to cycle length

T = percent of heavy vehicles

F = adjustment factor (1.25 to 2)

C = cycle length

N = # of lanes



# **APPENDIX G – FDOT PROGRAMMED SEGMENT COSTS**

**SR 482 PD&E Study  
FDOT Programmed Segment Costs**

<b>Segment</b>	<b>1,600 Feet West of Turkey Lake Road to MP 0.9</b>	<b>MP 0.9 to MP 2.83</b>	<b>MP 2.83 to MP 3.70</b>	<b>Turkey Lake Road North and South</b>	<b>Total</b>
<b>Length</b>	~1.20 miles	~1.93 miles	~0.87 miles	N/A	~4.00 miles
<b>Construction</b>	\$15.8	\$31.6	\$3.1	\$0.5	\$51.0
<b>Mitigation</b>	\$0.0	\$0.3	\$1.2	\$0.0	\$1.5
<b>Right-of-Way</b>	\$16.1	\$6.0	\$0.4	\$1.4	\$23.9
<b>Design</b>	\$1.6	\$3.1	\$0.8	\$0.1	\$5.6
<b>CEI (10%)</b>	\$1.6	\$3.1	\$0.3	\$0.1	\$5.1
<b>Construction Incentive (5%)</b>	\$0.8	\$1.6	\$0.2	\$0.0	\$2.6
<b>Total Project Cost</b>	\$35.9	\$45.7	\$6.0	\$2.1	\$89.7

\* All costs are in millions.

# **APPENDIX H – ENVIRONMENTAL CLASS OF ACTION DETERMINATION**



**Florida Department of Transportation**  
**ENVIRONMENTAL CLASS OF ACTION DETERMINATION**

**1. GENERAL INFORMATION**

County:	Orange County
Project Name:	SR 482 (Sand Lake Road) and Florida's Turnpike Interchange at SR 482
Project Limits:	From 1,600 feet west of Turkey Lake Road to President's Drive and a Proposed Interchange with Florida's Turnpike at SR 482.
	407143-3-22-01 & N/A
	407143-3-22-01
<b>FPN</b>	<b>FEDERAL</b>

**2. PROJECT DESCRIPTION**

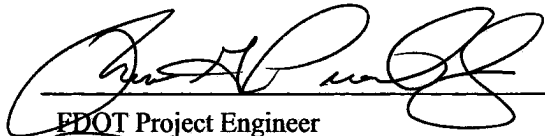

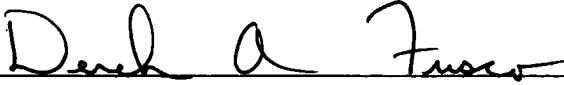
- a. Existing: See PDSR – Chapter 3 for SR 482 and Chapter 7 for the new Turnpike Interchange.
- b. Proposed Improvements: See PDSR – Chapter 3 for SR 482 and Chapter 7 for the new Turnpike Interchange.

**3. CLASS OF ACTION**

- a. Class of Action:
- |  |   |
|--|---|
| <input type="checkbox"/> Environmental Assessment                | b. Other Actions:   |
| <input type="checkbox"/> Environmental Impact Statement          | <input type="checkbox"/> Section 4(f) Evaluation                  |
| <input checked="" type="checkbox"/> Type 2 Categorical Exclusion | <input type="checkbox"/> Section 106 Consultation                 |
|  | <input checked="" type="checkbox"/> Endangered Species Assessment |
- c. Public Involvement:
- ☐ A public hearing is not required, therefore, approval of this Type 2 Categorical Exclusion constitutes acceptance of the location and design concepts for this project.
  - ☒ A public hearing was held on May 25 2006 and a transcript is included with the environmental determination. Approval of this Type 2 Categorical Exclusion determination constitutes location and design concept acceptance for this project.  
☐ An opportunity for a public hearing was afforded and a certification of opportunity is included with the environmental determination. Approval of this Type 2 Categorical Exclusion determination constitutes acceptance of the location and design concepts for this project.
  - ☐ A public hearing will be held and the public hearing transcript will be provided at a later date. Approval of this type 2 Categorical Exclusion DOES NOT constitute acceptance of the project's location and design concepts.  
☐ An opportunity for a public hearing will be afforded and a certification of opportunity will be provided at a later date. Approval of this Type 2 Categorical Exclusion determination DOES NOT constitute acceptance of the project's location and design concepts.
- d. Cooperating Agency: ☐ COE ☐ USCG ☐ FWS ☐ EPA ☐ NMFS ☒ None


---

**4. REVIEWER'S SIGNATURES**

	8 / 16 / 2006
FDOT Project Engineer	Date
	8 / 16 / 2006
FDOT Environmental Administrator	Date
	8 / 16 / 2006
FHWA Transportation Engineer	Date

---

**5. FHWA CONCURRENCE**

	8 / 16 / 2006
(For) Division Administrator	Date

## 6. IMPACT EVALUATION

Topical Categories	S i g n	M i n	N o n	N o I n v	REMARKS
<b>A. SOCIAL IMPACTS</b>					
1. Land Use Changes	[ ]	[ ]	[x]	[ ]	See Section 4.3.1.1 & 8.2.1.1
2. Community Cohesion	[ ]	[x]	[ ]	[ ]	See Section 4.3.1.2 & 8.2.1.2
3. Relocation Potential	[ ]	[ ]	[x]	[ ]	See Section 4.3.1.3 & 8.2.1.3
4. Community Services	[ ]	[ ]	[x]	[ ]	See Section 4.3.1.4 & 8.2.1.4
5. Title VI Considerations	[ ]	[ ]	[x]	[ ]	See Section 4.3.1.5 & 8.2.1.5
6. Controversy Potential	[ ]	[x]	[ ]	[ ]	See Section 4.3.1.6 & 8.2.1.6
7. Utilities and Railroads	[ ]	[x]	[ ]	[ ]	See Section 4.3.1.7 & 8.2.1.7
<b>B. CULTURAL IMPACTS</b>					
1. Section 4(f) Lands	[ ]	[ ]	[x]	[ ]	Section 4.3.2.1 & 8.2.2.1
2. Historic Sites/District	[ ]	[ ]	[x]	[ ]	Section 4.3.2.2 & 8.2.2.2
3. Archaeological Sites	[ ]	[ ]	[x]	[ ]	Section 4.3.2.2 & 8.2.2.2
4. Recreation Areas	[ ]	[ ]	[x]	[ ]	See Section 4.3.2.3 & 8.2.2.3
<b>C. NATURAL ENVIRONMENT</b>					
1. Wetlands	[ ]	[x]	[ ]	[ ]	See Section 4.3.3.1 & 8.2.3.1
2. Aquatic Preserves	[ ]	[ ]	[ ]	[x]	
3. Water Quality	[ ]	[ ]	[x]	[ ]	See Section 4.3.3.2 & 8.2.3.2
4. Outstanding Fla. Waters	[ ]	[ ]	[ ]	[x]	
5. Wild and Scenic Rivers	[ ]	[ ]	[ ]	[x]	
6. Flood plains	[ ]	[x]	[ ]	[ ]	See Section 4.3.3.3 & 8.2.3.3
7. Coastal Zone Consistency	[ ]	[ ]	[x]	[ ]	See Section 4.3.3.4 & 8.2.3.4
8. Coastal Barrier Islands	[ ]	[ ]	[ ]	[x]	
9. Wildlife and Habitat	[ ]	[x]	[ ]	[ ]	See Section 4.3.3.5 & 8.2.3.5
10. Farmlands	[ ]	[ ]	[ ]	[x]	
11. Essential Fish Habitat	[ ]	[ ]	[ ]	[x]	NMFS Letter dated August 15, 2005
<b>D. PHYSICAL IMPACTS</b>					
1. Noise	[ ]	[ ]	[x]	[ ]	See Section 4.3.4.1 & 8.2.4.1
2. Air	[ ]	[ ]	[x]	[ ]	See Section 4.3.4.2 & 8.2.4.2
3. Construction	[ ]	[x]	[ ]	[ ]	See Section 4.3.4.3 & 8.2.4.3
4. Contamination	[ ]	[x]	[ ]	[ ]	See Section 4.3.4.4 & 8.2.4.4
5. Navigation	[ ]	[ ]	[ ]	[x]	
a. [x] FHWA has determined that a Coast Guard Permit IS NOT required in accordance with 23 CFR 650, Subpart H.					
b. [ ] FHWA has determined that a Coast guard Permit IS required in accordance with 23 CFR 650, Subpart H.					
<b>E. PERMITS REQUIRED</b>					
• SFWMD Individual Environmental Resource Permit					
• USACOE Individual Dredge and Fill					

## 7. WETLANDS FINDING (Applies to Type 2 Categorical Exclusions Only)

In accordance with Executive Order 11990, Protection of Wetlands, and Federal



Highway Administration (FHWA) Technical Advisory T6640.8A, the extent and types of wetlands in the study area were documented and impacts were evaluated.

The SR 482 recommended alternative will impact 12.13 acres of wetlands and 5.93 acres of 'other surface waters. Impacts associated with the new Turnpike interchange include 17.72 acres of wetlands and 4.9 acres of 'other surface water' impacts. Avoidance of wetland impacts is not practicable. All measures have been considered to minimize impact to wetlands and surface waters. To summarize:

- Construction of the Shingle Creek bridge will occur along existing alignment to avoid impacts to adjacent wetlands
- Pond locations will be selected to avoid/minimize impacts to wetlands
- BMP's and erosion control measures will be implemented during construction

The acreages identified here are maximum impacts and efforts to further minimize impacts will be considered during the final design phase.

*Based upon this, it is determined that there is no practicable alternative to the proposed construction in wetlands and that the proposed action includes all practicable measures to minimize harm to wetlands which may result from such use.*

## **8. COMMITMENTS AND RECOMMENDATIONS**

See *Section 1.1*.

# **APPENDIX I – SAND LAKE ROAD A.N. COMMENTS AND RESPONSES**

## SR 482 ADVANCED NOTIFICATION COMMENTS & RESPONSES

Advanced Notification responses were received from 10 Agencies:

- City of Orlando Transportation Planning Department
- Orange County Public Works Department, Transportation Planning Division
- Orange County Environmental Protection Division
- U.S. Fish and Wildlife Service
- Clearinghouse (FDEP, East Central Florida Regional Planning Council (ECFRPC), Florida Fish and Conservation Commission (FFWCC) Florida Department of State, South Florida Water Management District,
- Division and US Department of Commerce – National Oceanic and Atmospheric Administration. National Marine Fisheries Service (NMFS)

A summary of each agency comments and responses, as appropriate are provided below.

**City of Orlando – Transportation Planning Department** (Letter dated January 25, 2006 & August 22, 2005).

Comment: Full accommodation and the potential enhancement of bicycle, pedestrian, and transit modes should be included as part of the project. The project will also need to accommodate the crossing of the Shingle Creek Multi-use Trail. The Shingle Creek Trail Bridge should be placed at an elevation that will allow for a trails underpass. Wider FDOT standard trail width (12 feet or greater) sidewalks will be needed for the short segment of the right-of-way where the trail runs parallel to the roadway.

Response: Coordination with the City of Orlando – Transportation Planning Department has occurred regarding bicycle, pedestrian and transit facilities. The Shingle Creek Trail will be incorporated into the project.

**Orange County Public Works Department – Transportation Planning Division** (Letter dated January 25, 2006)

Comment: The project is consistent with the county's approved 2020 Long Range plan map.

Response: None required.

**Orange County Environmental Protection Division** (Letter dated January 12, 2006) and August 23, 2005)

Comment: Make feasible attempts to incorporate areas currently not receiving stormwater runoff treatment into the stormwater management system. Minimize and avoid wetlands where possible and to compensate for wetland impacts; mitigation should be within the Shingle Creek Hydrologic Basin. There should be no increase in the 100-year floodplain elevation as a result of the proposed project. Maintain the movement of wildlife in the Shingle Creek wetlands and under SR 482. Sediment and erosion control measures should be in place to prevent the discharge of turbid water offsite and to protect the water quality of Shingle Creek. Coordinate with the appropriate agencies to ensure that all flora and fauna listed as threatened endangered or species of special concern is addressed. Air quality should be addressed to minimize the affects. Note that there is one petroleum-contaminated site located near the proposed construction.

Response: Stormwater treatment has been incorporated into the project. All attempts to avoid and/or minimize impacts to wetlands have occurred (see Wetland Evaluation Report). However some impacts will occur and will be mitigated for through the use of SB 1986. No impact to wildlife



movement will occur. Wildlife movement in the Shingle Creek wetlands will be maintained under SR 482 and the Turnpike. During construction appropriate Best Management Practices including the use of turbidity barriers will be required. An Endangered Species Biological Assessment has been prepared for the project and has been reviewed by appropriate agencies including US Fish and Wildlife Service. No air quality impacts will occur with the project. A Contamination Screening Evaluation has been prepared and all identified potential contamination sites have been documented in the Contamination Screening Evaluation report.

**U.S. Fish and Wildlife Service** (Letter dated December 28, 2005)

Comment: The Service requests a description of the habitat in the undeveloped parcels and a map detailing the location of the conservation areas. The Service recommends that the wetlands within the project area be delineated and evaluated using Universal Mitigation Assessment Module (UMAM). If impacts to wetlands are unavoidable, the Service recommends minimizing the impacts as much as possible and that all impacts to wetlands be mitigated, preferably mitigation should be in-kind and within the same watershed basin. A survey for endangered species should be conducted within the project area.

Response: An Endangered Species Biological Assessment has been prepared for this project and has been submitted to the USFWS office for review and concurrence of no adverse impact to any listed species. Mitigation for any impacts to wetlands will be through the SB 1986.

**Florida Department of Environmental Protection – Clearinghouse** (Letter dated September 13, 2005)

Comment: The state has no objections to allocation of federal funds for the subject project and, therefore, the funding award is consistent with the Florida Coastal Management Program (FCMP). The applicant must, however, address the concerns identified by the reviewing agencies prior to project implementation. The state's continued concurrence with the project will be based, in part, on the adequate resolution of any issues identified during this and subsequent reviews. Clearinghouse comments were received from:

- **East Central Florida Regional Planning Council**

Comment: The proposed project as presented is consistent with the adopted Goals, Policies and Objectives of the ECFRPC.

- **Florida Fish and Conservation Commission (FFWCC)**

Comment: No comment.

- **Florida Department of State**

Comment: No comment.

- **FDEP**

Comment: No comment

- **South Florida Water Management District**

Comment: The project will require an ERP. All wetlands should be identified. Wetland mitigation areas under conservation easement may be present. Submerged lands (Shingle Creek) and flood plains may be impacted.

Response: An ERP will be obtained during the design phase of this project. Wetland Evaluation Report has been prepared and all efforts to minimize impacts have occurred. It is noted that conservation lands are present within the project area. No impact to these lands is anticipated. A coordination meeting was held with SFWMD staff on 9/26/05.

**US Department of Commerce – National Oceanic and Atmospheric Administration.- National Marine Fisheries** (letter dated August 15, 2005)

Comment: We find that the proposed work would not impact areas that support NMFS trust resources. Therefore NMFS has no comments or recommendations and no further action is required.

# **APPENDIX J – SAND LAKE ROAD SHPO COORDINATION LETTER**





FLORIDA DEPARTMENT OF STATE  
**Sue M. Cobb**  
Secretary of State  
DIVISION OF HISTORICAL RESOURCES

Received

MAY 11 2006

FDOT  
Environmental Management

Bob Gleason  
Florida Department of Transportation  
719 South Woodland Boulevard  
DeLand, FL 32720

May 9, 2006

RE: DHR Project File Number: 2006-3627  
Received by DHR: May 8, 2006  
*Project: Cultural Resource Assessment Survey Of Eleven Proposed Stormwater Ponds For The State Road 482 PD&E Study From I-4 To President's Drive, Orange County, Florida*

Dear Mr. Gleason:

Our office received and reviewed the above referenced project in accordance with Chapter 267, *Florida Statutes*. It is the responsibility of the State Historic Preservation Officer to advise and assist, as appropriate, Federal and State agencies in carrying out their historic preservation responsibilities; to cooperate with State agencies to ensure that historic properties are taken into consideration at all levels of planning and development; and to consult with the appropriate State agencies undertakings that may affect historic properties and the content and sufficiency of any plans developed to protect, manage, or to reduce or mitigate adverse effects to such properties.

A cultural resources assessment survey, including 27 shovel tests, was conducted and found no new or previously recorded archaeological sites. The survey did not locate any previously recorded or newly identified historic structures within the project area. As a result the Florida Department of Transportation concluded that no historic properties listed or eligible for listing in the *National Register of Historic Places* will be affected by the undertaking. Based on the information provided, our office finds the submitted report complete and sufficient and concurs with the findings.

If you have any questions, please contact Duane Denfeld, Architectural Historian, Transportation Compliance Review Program, by email [dhdenfeld@dos.state.fl.us](mailto:dhdenfeld@dos.state.fl.us) or at 850-245-6430.

Sincerely,

Frederick P. Gaske, Director, and  
State Historic Preservation Officer

500 S. Bronough Street • Tallahassee, FL 32399-0250 • <http://www.flheritage.com>

☐ Director's Office  
(850) 245-6300 • FAX: 245-6435

☐ Archaeological Research  
(850) 245-6444 • FAX: 245-6452

☒ Historic Preservation  
(850) 245-6333 • FAX: 245-6437

☐ Historical Museums  
(850) 245-6400 • FAX: 245-6433

☐ Palm Beach Regional Office  
(561) 279-1475 • FAX: 279-1476

☐ St. Augustine Regional Office  
(904) 825-5045 • FAX: 825-5044

☐ Tampa Regional Office  
(813) 272-3843 • FAX: 272-2340

# **APPENDIX K – WATER QUALITY IMPACT EVALUATION (SAND LAKE ROAD WIDENING)**

## WQIE CHECK LIST

Project Name: SR 482 PD&E

County: Orange

FIN (Financial Number): 407143-3-22-01 and 407143-3-22-02

Federal Aid Project No.: Not Applicable

Short Project Description: The proposed project involves evaluating improvements to SR 482 from just west of Turkey Lake Road east to President's Drive and developing a new Turnpike Interchange at Sand Lake Road and/or John Young Parkway.

### PART 1; DETERMINATION OF WQIE SCOPE

Does project increase impermeable surface area? ☒ Yes ☐ No

Does project alter the drainage system? ☒ Yes ☐ No

If the answer to both questions is no, complete the WQIE by checking Box A in Part 4.

Do environmental regulatory requirements apply? ☒ Yes ☐ No

If no, proceed to Part 4 and check Box B.

### PART 2: PROJECT CHARACTERISTICS

20-year design ADT: Ranges from 13,800 to 94,500 Expected speed limit: 40-55m/hr

Drainage area: 98.0 acres 48.3 % Impervious 32.5 % Pervious

Land Use: To be determined % Residential; 0.9 % Commercial;     % Industrial;  
    % Agricultural; 9.0 % Wetlands;     % Other Natural

Potential large sources of pollution (identify): No large sources of pollution have been identified along the project corridor.

Groundwater Receptor (name of aquifer or N/A): Floridan

Designated well head protection area: ☐ Yes ☒ No Name:       

Sole source aquifer: ☐ Yes ☒ No Name:       

Groundwater recharge mechanism: Rainfall, infiltration.

(Notify District Drainage Engineer if karst conditions expected)



**WQIE CHECK LIST (Contd.)**

Surface water receptor (name of N/A): Shingle Creek

Classification: ☐ I ☐ II ☒ III ☐ IV ☐ V

Special Designation (check all that apply):

☐ ONRW ☐ OFW ☐ Aquatic Preserve ☐ Wild & Scenic River  
☐ Special Water ☐ SWIM Area ☐ Local Comp Plan ☐ MS4 Area  
☐ Other (specify): \_\_\_\_\_

Conceptual storm water conveyances and system (check all that apply):

☒ Swales ☒ Curb and Gutter ☐ Scuppers ☒ Pipe ☐ French Drains  
☒ Retention/ Detention Ponds ☐ Other \_\_\_\_\_

**PART 3: ENVIRONMENTAL REGULATORY REQUIREMENTS**

Regulatory Agency (check all that apply)	Reference citation of regulatory criteria (attach copy of pertinent pages)	Most stringent criteria (check all that apply)
FDEP <input checked="" type="checkbox"/>	NPDES	<input type="checkbox"/>
WMD <input checked="" type="checkbox"/> (Specify) <u>SFWMD</u>	40C-4	<input checked="" type="checkbox"/>
Other <input checked="" type="checkbox"/> (Specify) <u>USACOE</u>	Section 404	<input type="checkbox"/>

Proceed to Part 4 and check Box C.

**WQIE CHECK LIST (Contd.)**

**PART 4: WQIE DOCUMENTATION**

- A. ☐ Water quality is not an issue.
- B. ☐ No regulatory requirements apply to water quality issues. (Document by checking the “none” box for water quality in Section 6.C.3 of the Environmental Determination Form of Section 5.C.3 of the SEIR).
- C. ☒ Regulatory requirements apply to water quality issues. Water quality issues will be mitigated through compliance with the quantity design requirements placed by South Florida Water Management District, an authorized regulatory agency. (Document by checking the “none” box for water quality in Section 6.C.3 of the Environmental Determination Form of Section 5.C.3 of the SEIR).

Evaluator Name (print): Lynn Kiefer

Office: Kimley-Horn and Associates, Inc.

Signature \_\_\_\_\_ Date: March 21, 2006

# **APPENDIX L – USFWS CONCURRENCE CORRESPONDENCE**





IN REPLY REFER TO:

## United States Department of the Interior

### FISH AND WILDLIFE SERVICE

6620 Southpoint Drive, South  
Suite 310  
Jacksonville, Florida 32216-0912

May 23, 2006

Received

MAY 31 2006

Mr. Bob Gleason  
Environmental Administration  
Florida Department of Transportation  
719 South Woodland Boulevard  
Deland, FL 32720-6834

FDOT  
Environmental Management

FWS Log. No: 41910-2006-I-0178

Project Name: Sand Lake Drive (SR 482) from West of Turkey Lake Drive to President's Drive  
and Florida's Turnpike and John Young Parkway and/or SR 482

County: Orange

Dear Mr. Gleason:

The U.S. Fish and Wildlife Service (Service) has reviewed the modified plans for the proposed widening of Sand Lake Drive from west of Turkey Lake Drive to President's Drive and Florida Turnpike and John Young Parkway. The project is located in Orange County, Florida. The project has the potential to affect the eastern indigo snake (*Drymarchon corais couperi*) and the wood stork (*Mycteria americana*). We submit the following comments in accordance with the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 *et seq.*) and Section 7 of the Endangered Species Act of 1973 (Act), as amended (16 U.S.C. 1531 *et seq.*).

The eastern indigo snake (*Drymarchon corais couperi*) may occupy a broad range of habitats varying from scrub and sandhill communities to wet prairies and mangrove swamps. The eastern indigo is strongly associated with high, dry, well-drained sandy soils, and closely parallels habitat preferred by the gopher tortoise (*Gopherus polyphemus*), a state of Florida listed species. The Florida Department of Transportation (FDOT) has determined that the project may affect, but is not likely to adversely affect, the eastern indigo snake. The Service concurs with this determination. The FDOT stated in their coordinate letter that the standard protection measures for the eastern indigo snake will be conditions of the permit. Those measures can be found at the Service's Jacksonville Ecological Service Field Office website at:


<http://northflorida.fws.gov/IndigoSnakes/east-indigo-snake-measures-071299.htm>.

Wood storks (*Mycteria americana*) have been observed foraging within the project area. The Service has the following recommendations to reduce impacts to foraging wood storks within the proposed project area: (1) the wetlands created with the proposed project should be similar to, or of better quality than, the impacted wetlands, and (2) the wetlands preserved and created on-site have similar hydrology to the wetlands impacted.

We look forward to coordinating with you during your project. If you have any further questions, please feel free to contact Ann Marie Lauritsen at (904) 232-2580 ext 111. Thank you for the opportunity to comment.

Sincerely,

A handwritten signature in cursive script that reads "Stephen R. Butler".

 David L. Hankla  
Field Supervisor

JUL 17 2006

KHA



# Florida Department of Transportation

JEB BUSH  
GOVERNOR

719 South Woodland Boulevard  
DeLand, FL 32720-6834

DENVER J. STUTLER, JR.  
SECRETARY

July 13, 2006

Ms. Ann Marie Lauritsen  
U.S. Fish and Wildlife Service  
North Florida Ecological Services  
6620 Southpoint Drive, South, Suite 310  
Jacksonville, FL 32216-0912

**Re: Endangered Species Biological Assessment Concurrence Letter**

Sand Lake Drive (SR 482) from West of Turkey Lake Drive to President's Drive and Florida's  
Turnpike and John Young Parkway and/or SR 482  
Financial Project ID: 407143-3-22-01 & 407143-3-22-02  
Orange County, Florida  
FWS Log No: 41910-2006-I-0178

Dear Ms. Lauritsen:

In response to your May 23, 2006 letter regarding your recommendations to reduce impacts to wood storks, we offer the following response:

Compensation for wetland impacts that are unavoidable in the construction of this project will be mitigated according to Section 373.4137 Florida Statutes. Funds used for mitigation are provided by FDOT and managed by the SJRWMD, with USACE oversight and approval. The USACE will use the wetland functional assessment results to compare the impacts with the proposed mitigation to ensure a balance is maintained in the drainage basin. FDOT will coordinate with the permitting agencies and with USFWS during the design and permitting phase of the project as above on mitigation and minimization of impacts.

In consideration of the above, and contingent on satisfactory coordination with USFWS and other resource agencies during permitting and subsequent project development phases, we request your concurrence that the project may affect but is not likely to adversely affect the wood stork.

If you have any questions or comments, feel free to call me at (386) 943-5390. Thank you for your time and cooperation with this project.

Sincerely,

Bob Gleason  
Environmental Administrator

Cc: Derek Fusco, FHWA  
Tom Percival, FDOT D5  
Fred Gaines, Florida's Turnpike Enterprise  
Steve Godfrey, KHA  
Wendy Cyriacks, CECOS







# United States Department of the Interior

## FISH AND WILDLIFE SERVICE

6620 Southpoint Drive, South

Suite 310

Jacksonville, Florida 32216-0912

BG-T P

IN REPLY REFER TO:

41910-2006-I-0178

July 25, 2006

Mr. Bob Gleason  
District Environmental Administrator  
Florida Department of Transportation  
719 South Woodland Boulevard  
Mail Station 501  
Deland, Florida 32720

Received

JUL 31 2006

FDOT  
Environmental Management

FWS Log Number: 41910-2006-I-0178  
County: Orange

Dear Mr. Gleason:

The U.S. Fish and Wildlife Service (Service) received your letter written on July 13, 2006, replying to our comments for the proposed widening of Sand Lake Drive from west of Turkey Lake Drive to President's Drive and Florida's Turnpike and John Young Parkway located in Orange County, Florida. We submitted the following comments in accordance with the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 *et seq.*), and Section 7 of the Endangered Species Act of 1973 (Act), as amended (16 U.S.C. 1531 *et seq.*).

Wood storks (*Mycteria americana*) have been observed on-site. A major reason for the wood stork decline has been the loss and degradation of feeding habitat. A variety of nearby wetland habitats such as roadside or agricultural ditches can provide good forage areas for storks and storks typically do most of their feeding in wetlands between 5 and 40 miles from the colony. The Service concurs with FDOT's determination that the project "may affect but is not likely to adversely affect" the wood stork contingent on the created wetlands proposed be in-kind and have a similar hydrology to what is impacted.

Thank you for the opportunity to protect our federally listed species. If you have any questions, please contact Todd Mecklenborg in our Jacksonville Field office at (904) 232-2580 ext. 111.

Sincerely,

David L. Hankla  
Field Supervisor

# **APPENDIX M – PUBLIC HEARING CORRESPONDENCE**



## SR 482 PD&amp;E STUDY

## From West of Turkey Lake Road to Presidents Drive

## COMMENTS FORM

PUBLIC HEARING

MAY 25, 2006

[illegible]

**Mailing Instructions:** Please fold in thirds, tape to close, and attach 37¢ postage.

NOTE: COMMENT FORMS MUST BE POSTMARKED NO LATER JUNE 6, 2006, 5:00 P.M. TO BE INCLUDED AS A PART OF THE PUBLIC HEARING RECORD.



MAY 31 2006

17144

May 30, 2006

**FOLEY & LARDNER LLP  
ATTORNEYS AT LAW**

111 NORTH ORANGE AVENUE, SUITE 1800  
ORLANDO, FL 32801-2386  
P. O. BOX 2193  
ORLANDO, FL 32802-2193  
407.423.7656 TEL  
407.648.1743 FAX  
www.foley.com

WRITER'S DIRECT LINE  
407.244.7128  
tedwards@foley.com EMAIL

CLIENT/MATTER NUMBER  
033918-0106

**VIA U.S. MAIL AND EMAIL**

Mr. Steve Godfrey, P.E.  
Kimley-Horn and Associates, Inc.  
3660 Maguire Blvd., Suite 200  
Orlando, FL 32803

Re: SR 482 PD&E Study – Alternative Pond Site 5A/5B

Dear Mr. Godfrey:

Please be advised our law firm represents LMC Properties, Inc. ("LMC") in reference to the above matter. LMC owns fee simple title to approximately 174 acres upon which the SR 482 PD&E Study has preliminarily located Pond 5A or alternatively Pond 5B consisting of approximately 6 acres. LMC, and its agents, employees and representatives, have never consented or acquiesced to the location of the Ponds and strongly object to the same.

Please be advised the subject property is vested against DRI Review under Section 380.06, Florida Statutes, and is vested against concurrency requirements and consistency with the Comprehensive Policy Plan under Section 163.3167(8), Florida Statutes, and Sections 30-363 and 30-372 of the Orange County Code. On or about March 6, 2006, LMC submitted an application for rezoning of the subject property to Planned Development for a mixed use project for which the location of the ponds would be inconsistent, detrimental, and significantly impact the utility of the site. In addition, LMC is in contract negotiations with its neighbor to the south, Universal City Property Management III LLC ("UCPM"), to sell the easterly 101 acres of the subject property upon which the ponds are tentatively located, and the location of the ponds would severely impact the utility of the property by UCPM.

We understand UCPM has proposed alternative solutions for the drainage requirements of Pond 5A or Pond 5B which would not impact LMC's property. LMC encourages FDOT to carefully consider any alternatives. LMC reiterates its objection to the Pond 5A or Pond 5B being located upon LMC's property. The subject property is far too valuable due to the vesting and entitlements to be used for storm water ponds.

BOSTON  
BRUSSELS  
CHICAGO  
DETROIT

JACKSONVILLE  
LOS ANGELES  
MADISON  
MILWAUKEE

NEW YORK  
ORLANDO  
SACRAMENTO  
SAN DIEGO

SAN DIEGO/DEL MAR  
SAN FRANCISCO  
SILICON VALLEY  
TALLAHASSEE

TAMPA  
TOKYO  
WASHINGTON, D.C.

ORLA\_412918.1

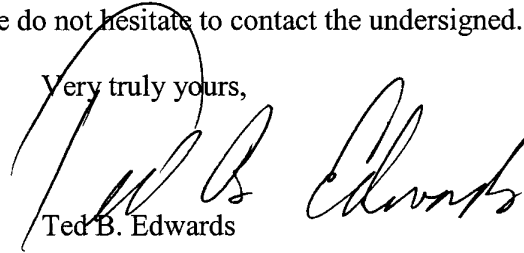
Mr. Steve Godfrey, P.E.

May 30, 2006

Page 2

Should you have any questions, please do not hesitate to contact the undersigned.

Very truly yours,

A handwritten signature in black ink, appearing to read "Ted B. Edwards", is written over the typed name. The signature is fluid and cursive.

Ted B. Edwards

TBE:djm

cc: Mr. Joseph Day (via email)  
James Denapoli, Esq. (via email)  
Mr. Frank Lindrum (via email)  
Mr. Marc Watson (via email)  
Jeff Montgomery, Esq. (via email)  
Tom Percival, FDOT (via email)

**UNIVERSAL CITY  
PROPERTY MANAGEMENT III, LLC**

---

9751 Universal Boulevard      Orlando, Florida 32819  
Phone: 407-226-3214      Fax: 407-226-3218

May 25, 2006

Mr. Tom Percival  
FDOT District 5  
719 S. Woodland Blvd.  
Deland, FL 32720

Re: **Sand Lake Road**

Dear Mr. Percival:

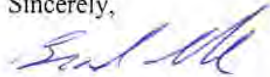
Lockheed Martin Corporation Properties is the current owner of the property located on the south side of Sand Lake Road, between the Lockheed Martin Plant and the Orange County South Water Reclamation Facility (the "Property") which is now under agreement in principle with Universal City Property Management III (UCPM). The pond 5a and 5b locations shown in the draft PD&E study are not compatible with our current planning for this Property, and would have a significant impact on the Property. Therefore, UCPM would not be supportive of locating pond 5 in either of the locations (a or b) presently shown.

UCPM is also the owner of substantial property to the south of this Property, and therefore would recommend that the State consider further evaluating alternatives to the current Pond 5a or 5b. UCPM would be willing to provide all master storm water permit information to the PD&E engineers for formal evaluation of alternate locations.

In addition, UCPM is preparing a detailed Development Plan for the Property for submission to Orange County in the last quarter of 2006. Our Development Plan is based on the curb cuts and median openings currently existing on Sand Lake Road. We would therefore recommend that the State evaluate the current PD&E study based on our Development Plan to ensure that any changes in median openings and curb cuts don't have a negative impact on land value and planned uses. Again, UCPM would be willing to share all of its information with the PD&E engineers to allow for prompt review.

Please feel free to contact me if additional information is required.

Sincerely,



Brad Goeb  
Project Director

Cc: Marc Watson, UCPM  
Bruce Williams, TEI



MORAN & SHAMS, P.A.  
ATTORNEYS AT LAW

*Respond, Advise and Serve™*

WALTER G. BENJAMIN

May 26, 2006

GARY M. BERKSON

ROBERT M. COX

KEITH C. DURKIN

FRANK GARCIA

C. JASON GRUNDORF

MARK H. JAMIESON

SCOTT E. JOHNSON

JAMES F. KIDD

CLINTON C. LYONS, JR.

BRIAN J. MORAN

THOMAS P. MORAN

SARAH P. REINER

MAURICE SHAMS

SIDNEY H. SHAMS

KATHRYN A. TERRY

Steven G. Godfrey  
Kimley-Horn & Associates, Inc.  
3660 Maguire Blvd., Suite 200  
Orlando, FL 32803

Thomas G. Percival, Jr.  
Department of Transportation  
719 S. Woodland Blvd., MS501  
Deland, FL 32720

Shad M. Smith, P.E.  
Department of Transportation  
719 S. Woodland Blvd., MS 542  
Deland, FL 32720

Re: State Road 482, Sand Lake Road Project  
Record of Public Hearing, May 25, 2006  
Fish Bones at 6707 Sand Lake Road/ Talk of the Town Restaurants

Gentlemen:

On behalf of Fish Bones at Sand Lake Road and Talk of the Town Restaurants, we wish to confirm by this letter our concerns expressed at the public hearing on May 25, 2006 and amplify those concerns pertaining to the proposed expansion of State Road 482, Sand Lake Road.

Fish Bones at 6707 W. Sand Lake Road is on the North side of Sand Lake Road. Pursuant to the proposal of the Department of Transportation, 15 feet is to be taken from the front of the Fish Bones property. However, the proposed taking from the Wyndham Hotel property on the South side of the proposed road expansion is very minimal. The alignment of the expansion of Sand Lake Road minimizes the impact on the Wyndham Hotel, including their parking, landscape and driveways. The taking of substantially more of the Fish Bones property in order to minimize the impact on the Wyndham Hotel and its property is inequitable and unjustifiable.

The proposed taking of property at the front of the Fish Bones restaurant is crucial and will have a substantial impact on the continuing operation of the Fish Bones restaurant. It will eliminate several important parking spaces and cause a congestion of vehicles in getting into the restaurant. It will affect the ambiance of the restaurant since it would be much closer to Sand Lake Road with less landscape and less parking. In addition, the existing signage will be affected. There may be a substantial difference in the grading between the street and the parking area, which will make it difficult for customers to drive into the parking area and to the restaurant. The pedestrian traffic to the restaurant from International Drive may be substantially reduced or eliminated. The

**MORAN & SHAMS, P.A.**

Fish Bones Restaurant/ Sand Lake Road Project  
Record of May 25, 2006 Public Hearing  
Page 2

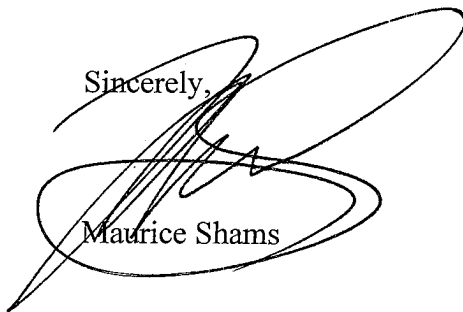
entrance to the restaurant will be substantially altered and valet parking may have to be eliminated since the space in front of the restaurant will be reduced and congested. Since the result of the alignment of the proposed road will cause more property to be taken from a strategic location of the Fish Bones restaurant, this could cause the restaurant to have to close its existing operation.

Any re-alignment recommended by the Wyndham Hotel representatives that will result in a greater taking of the Fish Bones property to accommodate the Hotel will be of serious concern to the owners of the Fish Bones restaurant. The imbalance created by the existing plan of the Department of Transportation would only be amplified by acceptance of the recommendations proposed by the Wyndham Hotel representatives.

We respectfully request that the Department of Transportation correct the imbalance of the taking of the property North and South of the proposed Sand Lake Road. This letter is submitted prior to June 6, 2006 and is requested to be a part of the record of the Public Hearing of May 25, 2006 as affirmed by the Department of Transportation representatives at the Public Hearing. Please also send a copy of the recommendations submitted to the Department of Transportation by the representatives of the Wyndham Hotel which were referred to at the May 25, 2006 hearing.

We appreciate the courtesy that has been extended by Mr. Godfrey and Mr. Percival, the Project Manager. We would appreciate the continuation of these courtesies as the project moves forward in the design phase.

Sincerely,

A large, stylized handwritten signature in black ink, appearing to read 'Maurice Shams', is written over the word 'Sincerely,' and the name 'Maurice Shams'.

Maurice Shams

MS/bjl

cc: Fish Bones Restaurant  
Talk of the Town Restaurants



SR 482 PD&E STUDY  
From West of Turkey Lake Road to Presidents Drive



COMMENTS FORM

PUBLIC HEARING  
MAY 25, 2006

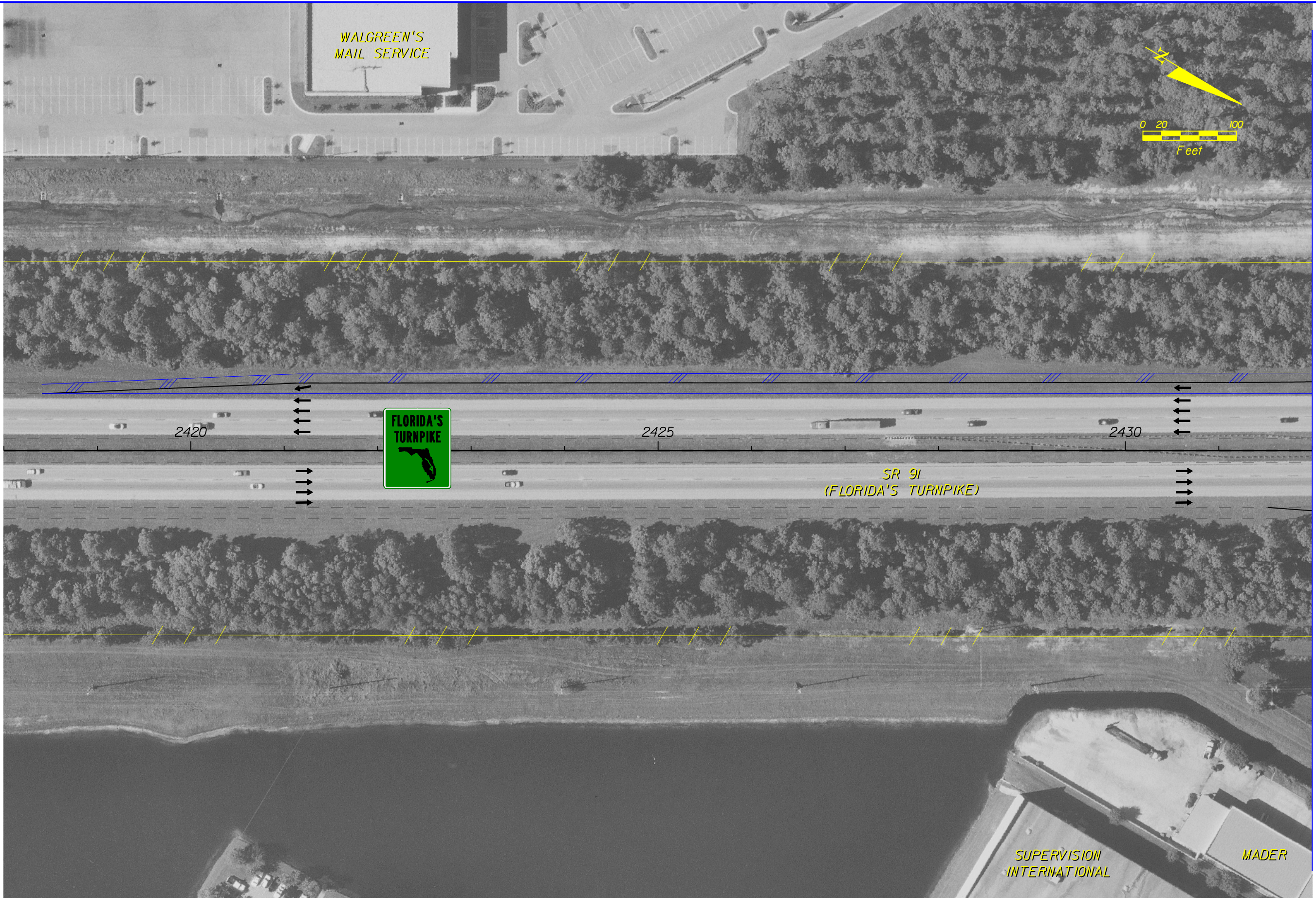
Name / Company	Address (including zip code)	Telephone Number
Fraser Howe	7582 Megan Elissa 32819	407-351-5114
COMMENTS:		
I am in favor of the Sun-Pass only interchange at Sand Lake Rd and the Turnpike. It will better serve the south west Orange community.		
I also like the proposed separated left-turn lanes on WB Sand Lake Rd and Turkey Lake Rd. This will help alleviate the current problem of motorists shifting lanes to far west.		
I understand there is a potential to <del>do these</del> improvements <del>as part of the</del> before the FDOT project. Please do <u>not</u> create 2 construction projects - do this work as part of the FDOT project!		
Mailing Instructions: Please fold in thirds, tape to close, and attach 37¢ postage.		

NOTE: COMMENT FORMS MUST BE POSTMARKED NO LATER JUNE 6, 2006, 5:00 P.M. TO BE INCLUDED AS A PART OF THE PUBLIC HEARING RECORD.




# **APPENDIX N – FLORIDA’S TURNPIKE INTERCHANGE CONCEPT PLANS**





REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION



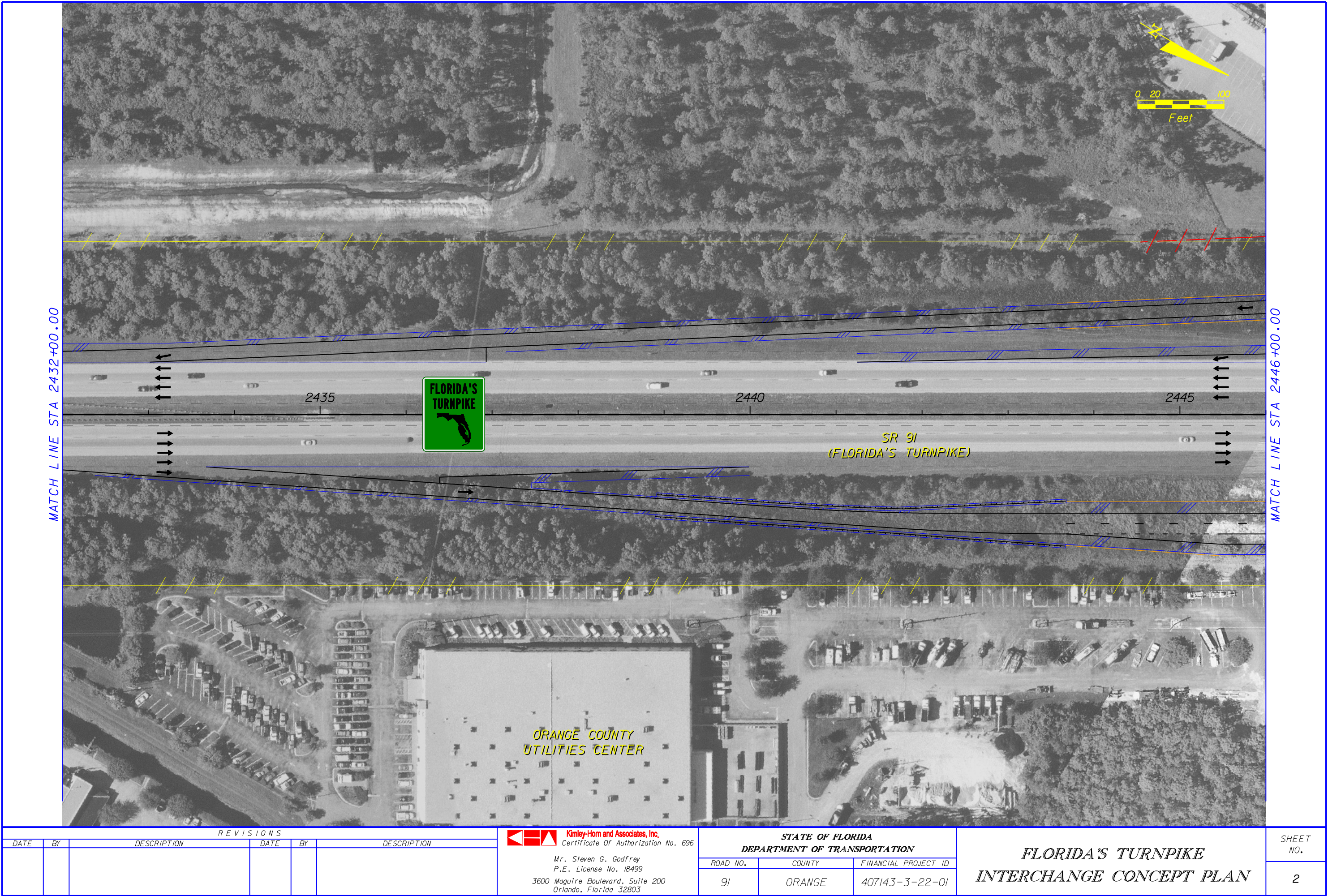
**Kimley-Horn and Associates, Inc.**  
Certificate Of Authorization No. 696  
  
Mr. Steven G. Godfrey  
P.E. License No. 18499  
3600 Maguire Boulevard, Suite 200  
Orlando, Florida 32803

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
9I	ORANGE	407143-3-22-01


**FLORIDA'S TURNPIKE  
INTERCHANGE CONCEPT PLAN**

SHEET NO.
1





REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

**Kimley-Horn and Associates, Inc.**  
Certificate Of Authorization No. 696

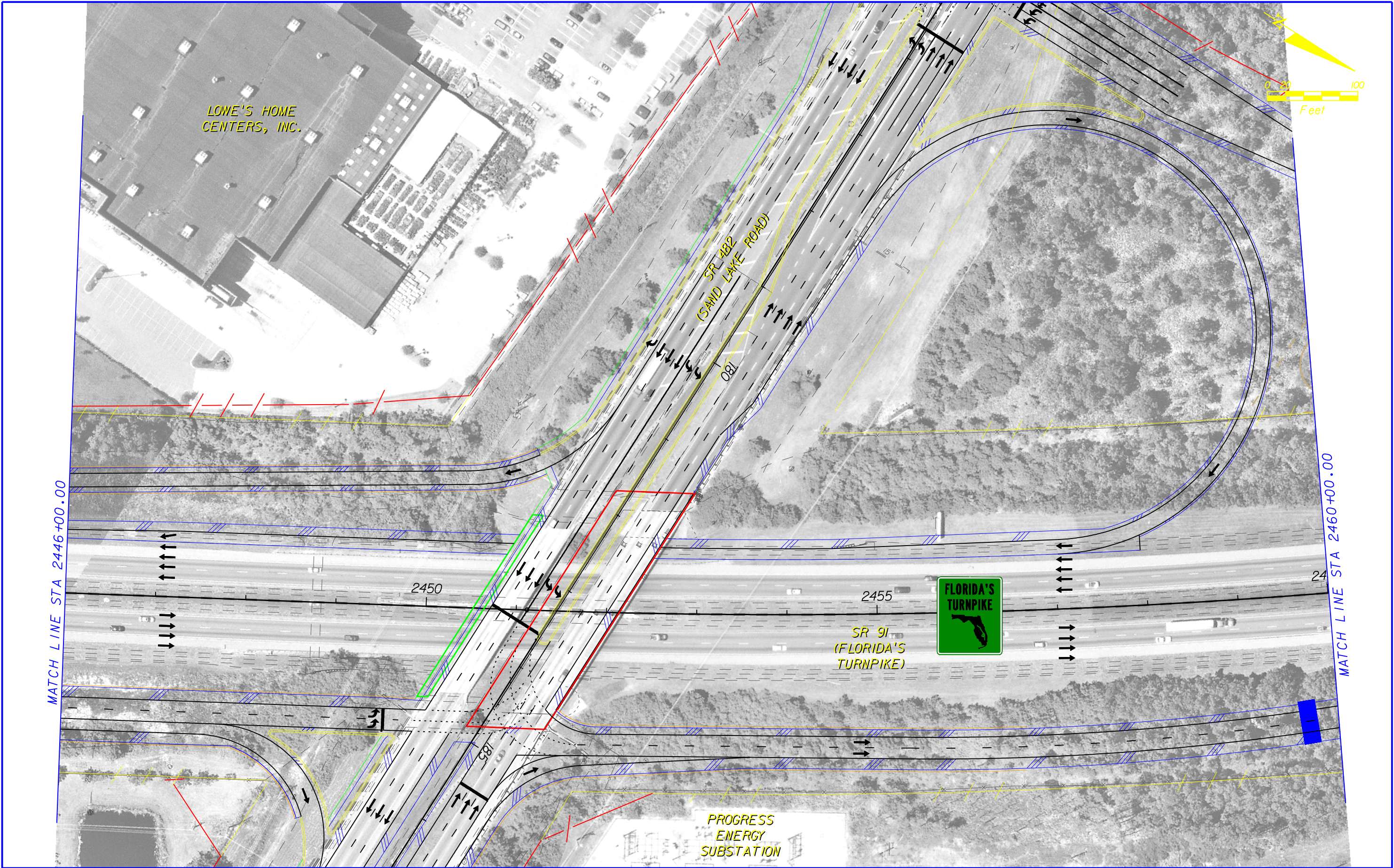
Mr. Steven G. Godfrey  
P.E. License No. 18499  
3600 Maguire Boulevard, Suite 200  
Orlando, Florida 32803

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
91	ORANGE	407143-3-22-01

**FLORIDA'S TURNPIKE  
INTERCHANGE CONCEPT PLAN**

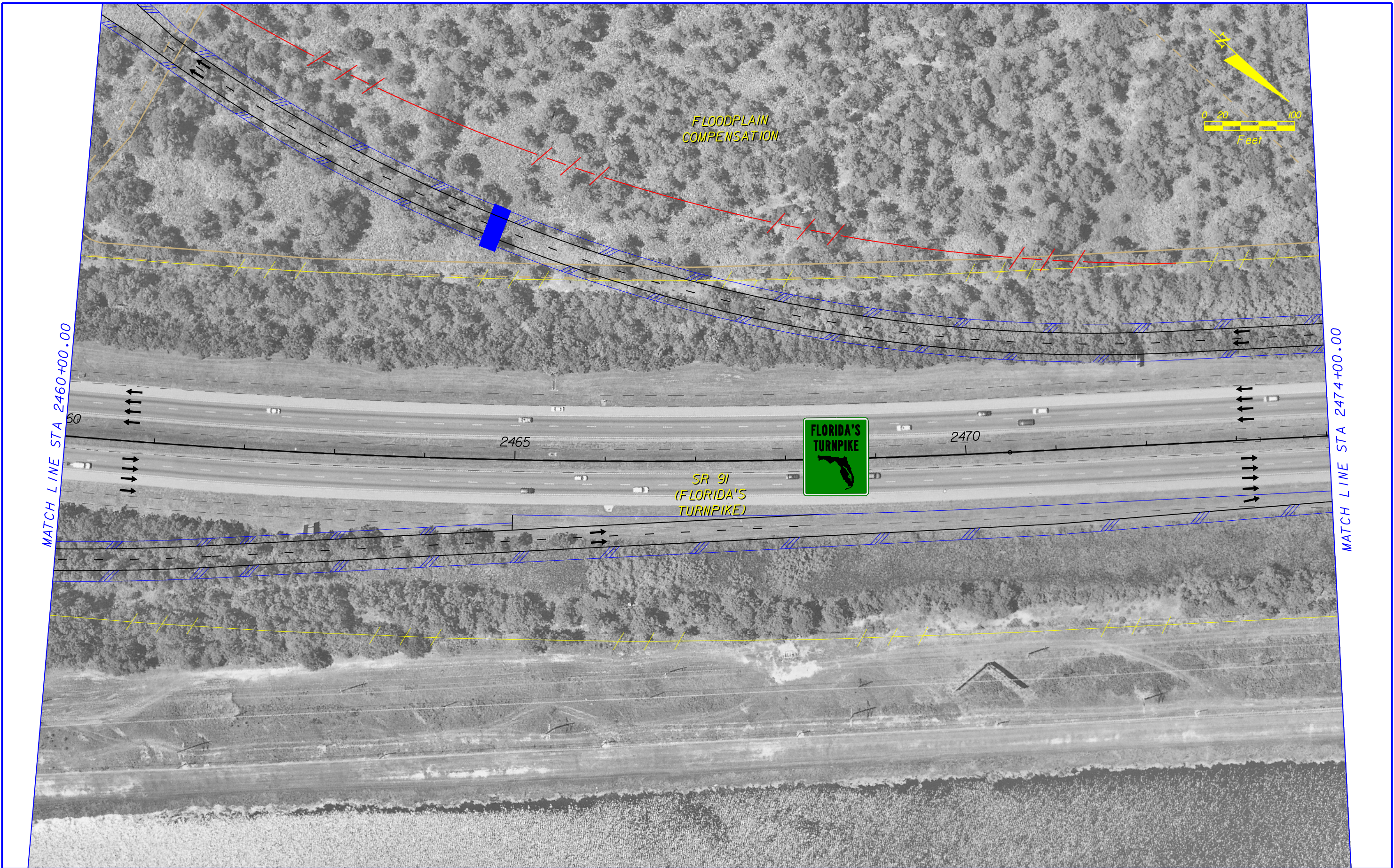
SHEET NO.
2





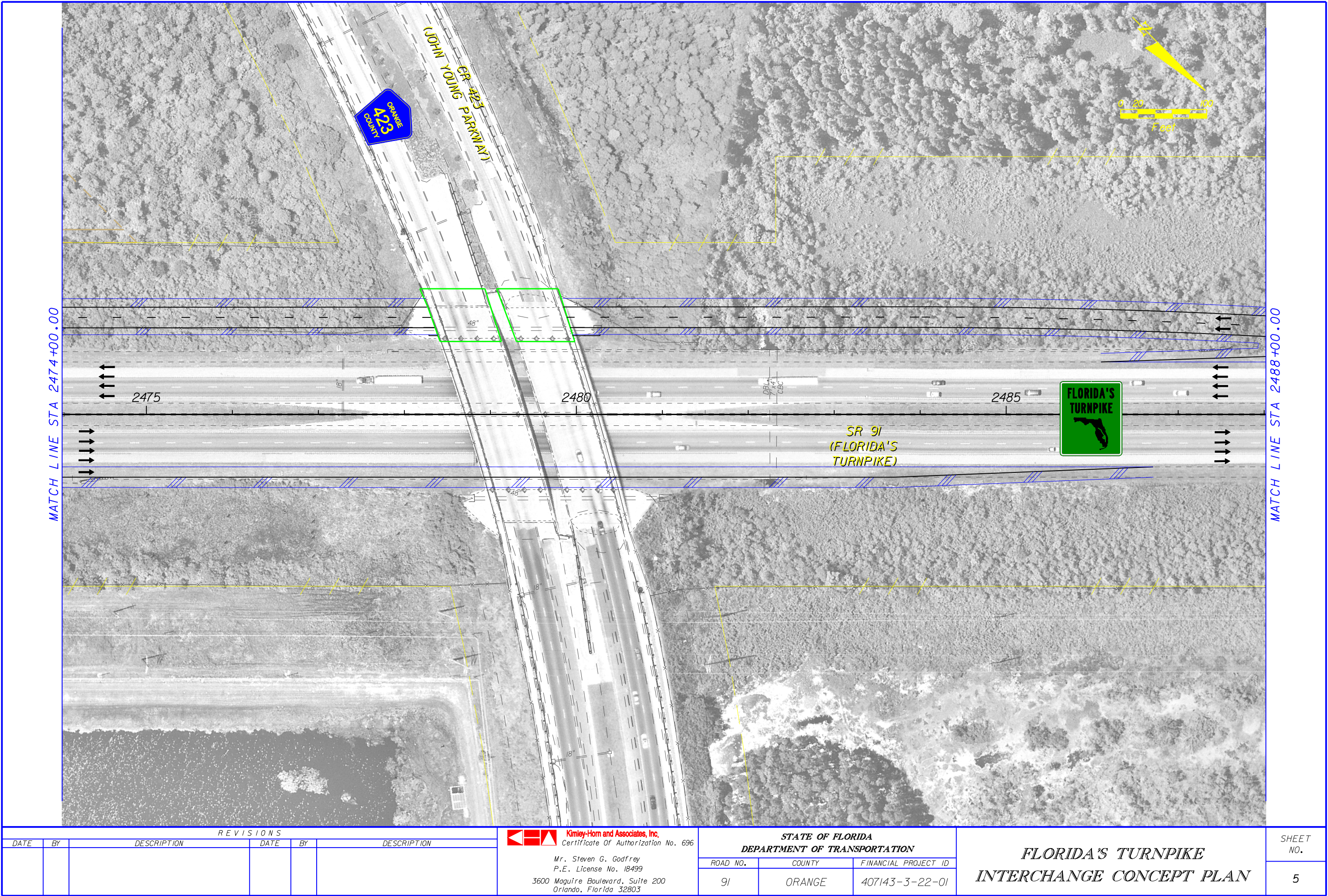
R E V I S I O N S						 <b>Kimley-Horn and Associates, Inc.</b> Certificate Of Authorization No. 696  Mr. Steven G. Godfrey P.E. License No. 18499 3600 Maguire Boulevard, Suite 200 Orlando, Florida 32803	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			FLORIDA'S TURNPIKE INTERCHANGE CONCEPT PLAN	SHEET NO.
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		3
							91	ORANGE	407143-3-22-01		






R E V I S I O N S						 <b>Kimley-Horn and Associates, Inc.</b> Certificate Of Authorization No. 696  Mr. Steven G. Godfrey P.E. License No. 18499  3600 Maguire Boulevard, Suite 200 Orlando, Florida 32803	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			FLORIDA'S TURNPIKE INTERCHANGE CONCEPT PLAN	SHEET NO.
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		4
							91	ORANGE	407143-3-22-01		





REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION



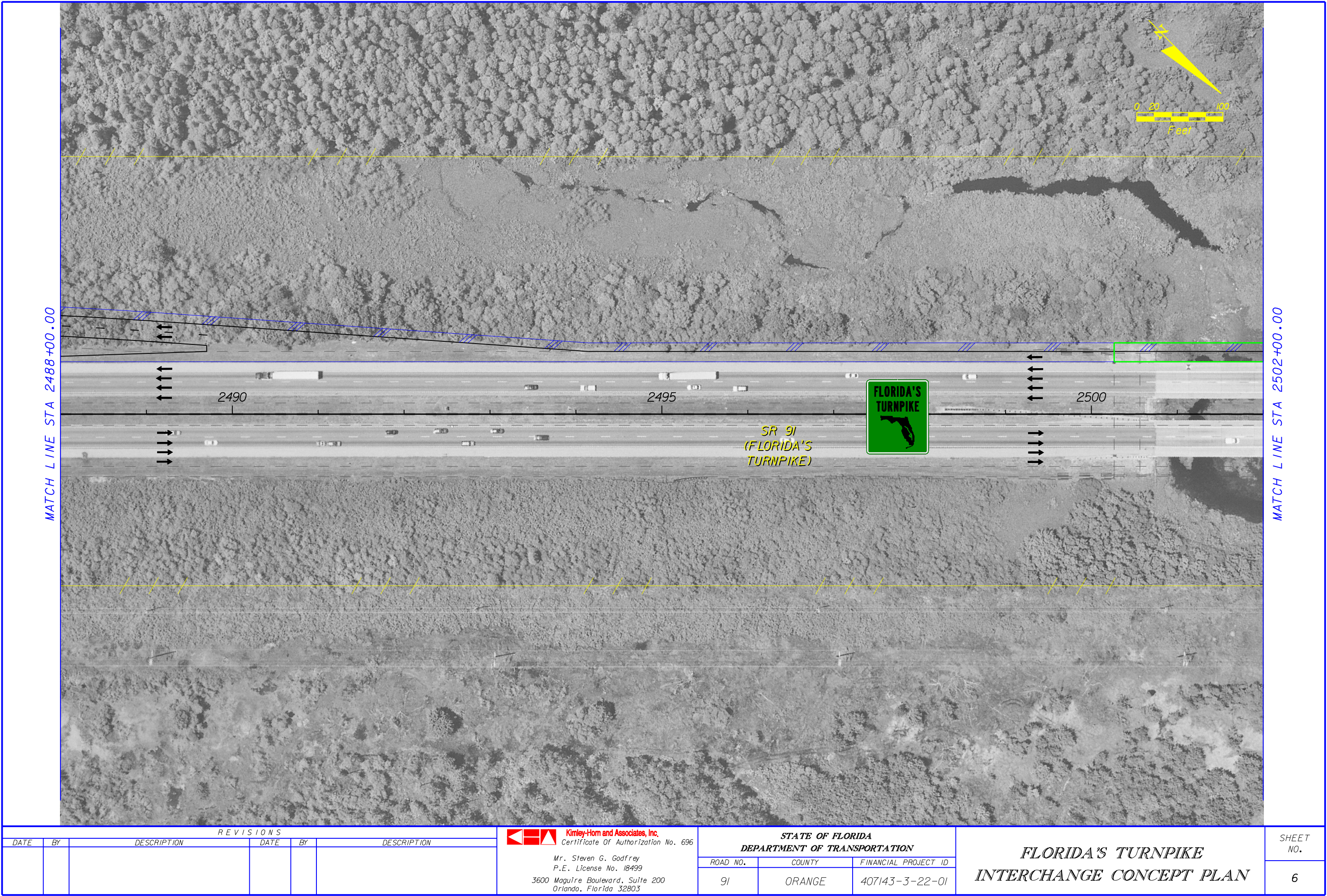
**Kimley-Horn and Associates, Inc.**  
Certificate Of Authorization No. 696  
  
Mr. Steven G. Godfrey  
P.E. License No. 18499  
3600 Maguire Boulevard, Suite 200  
Orlando, Florida 32803

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
91	ORANGE	407143-3-22-01


**FLORIDA'S TURNPIKE  
INTERCHANGE CONCEPT PLAN**

SHEET NO.
5





REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION



**Kimley-Horn and Associates, Inc.**  
Certificate Of Authorization No. 696  
  
Mr. Steven G. Godfrey  
P.E. License No. 18499  
3600 Maguire Boulevard, Suite 200  
Orlando, Florida 32803

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
9I	ORANGE	407143-3-22-01

**FLORIDA'S TURNPIKE  
INTERCHANGE CONCEPT PLAN**

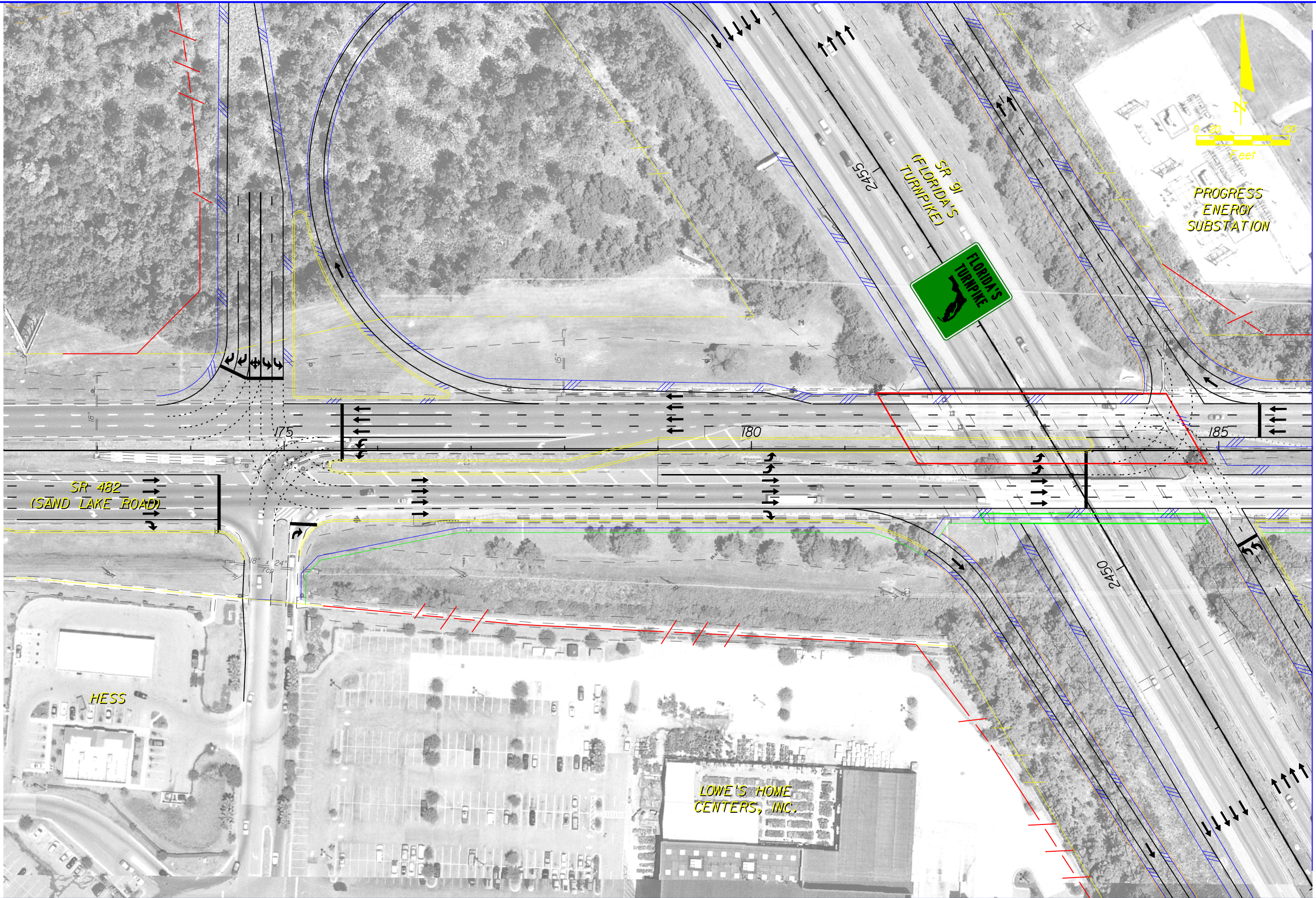
SHEET NO.
6





kim.seager 8/15/2006 1:15:50 PM G:\SR482\_JYP\_Turnpike\_Interchange\40714332201\roadway\plan\planrd06a.dgn

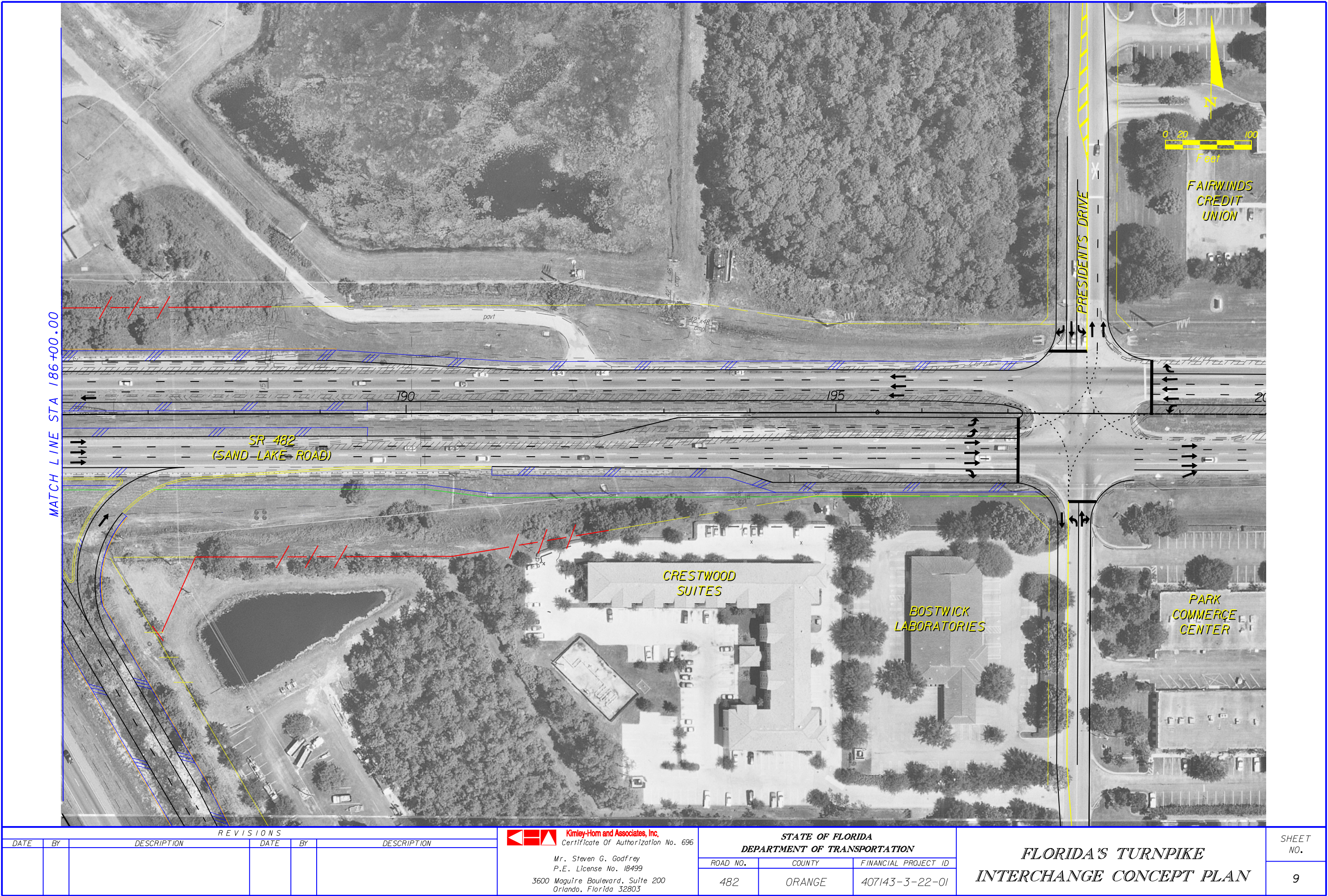





MATCH LINE STA 186+00.00

R E V I S I O N S						 <b>Kimley-Horn and Associates, Inc.</b> Certificate Of Authorization No. 696  Mr. Steven G. Godfrey P.E. License No. 18499  3600 Maguire Boulevard, Suite 200 Orlando, Florida 32803	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			FLORIDA'S TURNPIKE INTERCHANGE CONCEPT PLAN	SHEET NO.
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		8
							482	ORANGE	407143-3-22-01		





REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION



**Kimley-Horn and Associates, Inc.**  
Certificate Of Authorization No. 696  
  
Mr. Steven G. Godfrey  
P.E. License No. 18499  
3600 Maguire Boulevard, Suite 200  
Orlando, Florida 32803

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
482	ORANGE	407143-3-22-01

**FLORIDA'S TURNPIKE  
INTERCHANGE CONCEPT PLAN**

SHEET NO.
9



# **APPENDIX O – TURNPIKE INTERCHANGE ALTERNATIVES EVALUATION**

## Description of Alternatives



# **Interchange Alternatives at Florida's Turnpike/John Young Parkway/Sand Lake Road.**

## **Alternative 1: Single Point Interchange**

This alternative provides a single point interchange at Florida's Turnpike and John Young Parkway. A signalized intersection would be provided at this interchange. New exit ramps would provide Turnpike traffic access to northbound and southbound John Young Parkway. New entrance ramps would provide southbound traffic on John Young Parkway access to northbound and southbound Turnpike. Northbound traffic on John Young Parkway would have access to northbound Turnpike only. Northbound traffic would be required to access the southbound Turnpike via the Sand Lake Road ramp.

The addition of the northbound and southbound entrance ramps at Sand Lake Road were determined to be necessary due to weaving concerns along John Young Parkway. The primary weaving concern was the conflict between Sand Lake Road traffic entering John Young Parkway to access northbound Turnpike and northbound John Young Parkway traffic accessing southbound Turnpike.

A traffic separator would be provided on John Young Parkway, between the Turnpike and Sand Lake Road, to restrict traffic from the John Young Parkway / Sand Lake Road interchange from accessing northbound Turnpike. This segment of John Young Parkway is not long enough to provide sufficient weaving distance; therefore, traffic from the John Young Parkway / Sand Lake Road Interchange would be required to access northbound Turnpike from the Sand Lake Road / Turnpike interchange.

A signalized intersection would be provided at the Sand Lake Road / Turnpike Interchange, and new entrance ramps provide Sand Lake Road traffic access to northbound and southbound Turnpike. Turnpike traffic, however, would not be provided exits at Sand Lake Road. Turnpike traffic would be required to access Sand Lake Road via the John Young Parkway / Turnpike Interchange.

The John Young Parkway Bridges would be replaced in order to accommodate the new interchange. The northbound Turnpike Bridge over Shingle Creek would be widened in order to accommodate the northbound Turnpike entrance ramp from John Young Parkway. The westbound Sand Lake Road Bridge over the Turnpike would be replaced in order to accommodate new northbound and southbound Turnpike auxiliary lanes below. The eastbound Sand Lake Road bridge would be widened to accommodate a sidewalk on the south side. This new bridge would be able to accommodate the left turn movements to the Turnpike on-ramps. A new bridge would be required for the entrance ramp from Sand Lake Road to northbound Turnpike, where the ramp crosses over the northbound Turnpike exit ramp to John Young Parkway.

Sun-Pass Only Toll Plazas would be located north of John Young Parkway, for the Turnpike entrance and exit ramps to John Young Parkway. A Sun-Pass Only Toll Plaza would be located north of Sand Lake Road, for the entrance ramp from Sand Lake Road to northbound Turnpike.

Additional right-of-way would be required at the four quadrants of the John Yong Parkway interchange and at the northeast and southwest quadrants of the Sand Lake Road interchange to accommodate the new ramps. Right-of-way would

also be required along the northbound side of the Turnpike between John Young Parkway and Sand Lake Road.

### **Alternative 2: Split Diamond Interchange (Weave Section)**

This alternative provides a diamond interchange, with frontage road connections between both interchanges. Signalized intersections would be provided at the John Young Parkway / Turnpike Interchange and the Sand Lake Road / Turnpike Interchange. Northbound Turnpike traffic would have access to northbound John Young Parkway and Sand Lake Road via two separate northbound exits. Northbound traffic entering from Sand Lake Road would be combined with northbound traffic entering from John Young Parkway via a frontage road passing under John Young Parkway. This combined northbound traffic would enter the Turnpike on a single northbound entrance ramp.

Southbound Turnpike traffic exiting for both John Young Parkway and Sand Lake Road would use a single combined exit ramp north of John Young Parkway. Exiting southbound traffic would access Sand Lake Road via a frontage road passing under John Young Parkway. Southbound Turnpike traffic entering from John Young Parkway and Sand Lake Road would use two separate southbound entrance ramps.

The John Young Parkway Bridges would be replaced in order to accommodate the left turn movements to the Turnpike on-ramps. The westbound Sand Lake Road Bridge over the Turnpike would be replaced in order to accommodate new northbound and southbound Turnpike auxiliary lanes and the left turn movements to the Turnpike on-ramps. The eastbound Sand Lake Road bridge would be widened to accommodate a sidewalk on the south side. The northbound and southbound Turnpike Bridges over Shingle Creek would be widened in order to accommodate the Turnpike entrance and exit ramps from John Young Parkway.

A traffic separator would be provided on John Young Parkway, between the Turnpike and Sand Lake Road, to restrict traffic from the John Young Parkway / Sand Lake Road interchange from accessing northbound Turnpike. This segment of John Young Parkway is not long enough to provide sufficient weaving distance; therefore, traffic from the Interchange would be required to access northbound Turnpike from the Sand Lake Road / Turnpike interchange.

Sun-Pass Only Toll Plazas would be located north of John Young Parkway, on the combined northbound entrance and southbound exit ramps.

Additional right-of-way would be required at the four quadrants of the John Yong Parkway interchange and the Sand Lake Road interchange to accommodate the new ramps. Right-of-way would also be required along the northbound and southbound sides of the Turnpike between John Young Parkway and Sand Lake Road.

### **Alternative 3: Split Diamond Interchange (Braided Ramps)**

This alternative provides two separate diamond interchanges, at John Young Parkway and Sand Lake Road. Braided ramps are provided between John Young Parkway and Sand Lake Road due to the proximity of the two interchanges. Signalized intersections would be provided at the John Young

Parkway / Turnpike Interchange and the Sand Lake Road / Turnpike Interchange. Northbound Turnpike traffic would be provided access to northbound John Young Parkway only, and northbound John Young Parkway traffic would have access to the northbound Turnpike only.

Southbound Turnpike traffic would be provided access to eastbound Sand Lake Road only.

The John Young Parkway Bridges and the westbound Sand Lake Road Bridge over the Turnpike would be replaced in order to accommodate new northbound and southbound Turnpike auxiliary lanes. These new bridges would be able to accommodate the left turn movements to the Turnpike on-ramps. The eastbound Sand Lake Road bridge would be widened to accommodate a sidewalk on the south side. The northbound and southbound Turnpike Bridges over Shingle Creek would be widened to accommodate the Turnpike entrance and exit ramps from John Young Parkway. A new bridge would be required for the entrance ramp from Sand Lake Road to northbound Turnpike, where the ramp crosses over the northbound Turnpike exit ramp to John Young Parkway. A new bridge would also be required for the southbound Turnpike exit to Sand Lake Road.

A traffic separator would be provided on John Young Parkway, between the Turnpike and Sand Lake Road, to restrict traffic from the John Young Parkway / Sand Lake Road interchange from accessing northbound Turnpike. This segment of John Young Parkway is not long enough to provide sufficient weaving distance; therefore, traffic from the Interchange would be required to access northbound Turnpike from the Sand Lake Road / Turnpike interchange.

Sun-Pass Only Toll Plazas would be located north of John Young Parkway, for the Turnpike entrance and exit ramps to John Young Parkway. Sun-Pass Only Toll Plazas would be located north of Sand Lake Road for the northbound Turnpike entrance from Sand Lake Road and the southbound Turnpike exit to Sand Lake Road.

Additional right-of-way would be required at the four quadrants of the John Yong Parkway interchange and the Sand Lake Road interchange to accommodate the new ramps. Right-of-way would also be required along the northbound and southbound sides of the Turnpike between John Young Parkway and Sand Lake Road.

#### **Alternative 4: Sand Lake Interchange (With Loop Ramp)**

This alternative provides an interchange at Sand Lake Road, but does not provide direct access to John Young Parkway. A signalized intersection would be provided at the Sand Lake Road / Turnpike Interchange. New ramps would provide northbound and southbound Turnpike traffic access to eastbound and westbound Sand Lake Road. Westbound Sand Lake Road traffic would be provided access to the northbound Turnpike by means of a new Sun-Pass Only toll ramp. A new loop ramp will provide westbound traffic access to the southbound Turnpike. Eastbound traffic on Sand Lake Road will have access to northbound and southbound Turnpike.

Southbound Turnpike traffic exiting for Sand Lake Road would utilize a ramp aligned with the existing commercial center entrance on the south side of Sand Lake Road between John Young Parkway and the Turnpike.



The westbound Sand Lake Road Bridge over the Turnpike would be replaced in order to accommodate new northbound and southbound Turnpike auxiliary lanes. This new bridge would be able to accommodate the left turn movements to the Turnpike on-ramps. The eastbound Sand Lake Road bridge would be widened to accommodate a sidewalk on the south side.

Sun-Pass Only Toll Plazas will be located north of Sand Lake Road for the northbound Turnpike entrance from Sand Lake Road and the southbound Turnpike exit to Sand Lake Road.

Additional right-of-way would be required at the northwest quadrant of the John Young Parkway interchange. Right-of-way would also be required along the northeast, southwest and southeast quadrants of the Sand Lake Road interchange to accommodate the new ramps.

#### **Alternative 4A: Sand Lake Interchange (With Loop Ramp)**

This alternative provides the same movements as Alternative 4. However, in this option, the southbound Turnpike exit ramp to Sand Lake Road begins just south of the Turnpike Bridge over Shingle Creek, and extends parallel to the Turnpike under the John Young Parkway Bridge. This alternative requires the replacement of the end spans of the John Young Parkway Bridge in order to accommodate the new exit ramp below.

#### **Alternative 5: Split Diamond Interchange (Frontage Roads)**

This alternative provides a diamond interchange, split between John Young Parkway and Sand Lake Road. Frontage Roads are provided between John Young Parkway and Sand Lake Road. This alternative is similar to Alternative 2, except it combines the separate northbound Turnpike exit ramps and southbound Turnpike entrance ramps. Southbound Turnpike traffic would access Sand Lake Road via a frontage road after passing through the signalized intersection at John Young Parkway. Similarly, northbound Turnpike traffic would access John Young Parkway via a frontage road after passing through the signalized intersection at Sand Lake Road.

The southbound John Young Parkway Bridge would be replaced, and the northbound John Young Parkway Bridge would be widened. These improvements would accommodate left turn movements to the Turnpike on-ramps. The northbound Turnpike Bridge over Shingle Creek would be widened to accommodate the northbound Turnpike entrance ramp from John Young Parkway. The westbound Sand Lake Road Bridge over the Turnpike would be replaced in order to accommodate new northbound and southbound Turnpike auxiliary lanes. This new bridge would be able to accommodate the left turn movements to the Turnpike on-ramps. The eastbound Sand Lake Road bridge would be widened to accommodate a sidewalk on the south side.

A traffic separator would be provided on John Young Parkway, between the Turnpike and Sand Lake Road, to restrict traffic from the John Young Parkway / Sand Lake Road interchange from accessing northbound Turnpike. This segment of John Young Parkway is not long enough to provide sufficient weaving

distance; therefore, traffic from the Interchange would be required to access northbound Turnpike from the Sand Lake Road / Turnpike interchange.

Sun-Pass Only Toll Plazas would be located north of John Young Parkway, for the northbound Turnpike entrance and the southbound Turnpike exit.

Additional right-of-way would be required at the four quadrants of the John Yong Parkway interchange and the Sand Lake Road interchange to accommodate the new ramps. Right-of-way would also be required along the northbound and southbound sides of the Turnpike between John Young Parkway and Sand Lake Road.

### **Alternative 5A: Split Diamond Interchange**

This alternative provides a diamond interchange, split between John Young Parkway and Sand Lake Road. Signalized intersections would be provided at the John Young Parkway / Turnpike Interchange and the Sand Lake Road / Turnpike Interchange. At John Young Parkway, a northbound Turnpike entrance and southbound Turnpike exit would be provided. Northbound Turnpike traffic would access John Young Parkway via the Sand Lake Road / Turnpike Interchange. All southbound Turnpike traffic would enter via a ramp at Sand Lake Road. Both northbound Turnpike exit and entrance ramps would be provided at Sand Lake Road.

There will be no access from the Southbound Turnpike directly to Sand Lake Road, therefore, southbound Turnpike traffic wishing to go eastbound or westbound on Sand Lake Road will be required to exit at the John Young Parkway / Turnpike Interchange. Eastbound and westbound traffic on Sand Lake Road would be provided access to northbound and southbound Turnpike.

The southbound John Young Parkway Bridge would be replaced. This new bridge would be able to accommodate the left turn movements to the Turnpike on-ramps. The northbound Turnpike Bridge over Shingle Creek would be widened to accommodate the northbound Turnpike entrance ramp from John Young Parkway. The westbound Sand Lake Road Bridge over the Turnpike would also be replaced. This new bridge would be able to accommodate the left turn movements to the Turnpike on-ramps. The eastbound Sand Lake Road bridge would be widened to accommodate a sidewalk on the south side.

A traffic separator would be provided on John Young Parkway, between the Turnpike and Sand Lake Road, to restrict traffic from the John Young Parkway / Sand Lake Road interchange from accessing northbound Turnpike. This segment of John Young Parkway is not long enough to provide sufficient weaving distance; therefore, traffic from the Interchange would be required to access northbound Turnpike from the Sand Lake Road / Turnpike interchange.

Sun-Pass Only Toll Plazas would be located north of John Young Parkway, for the northbound Turnpike entrance and the southbound Turnpike exit.

Additional right-of-way would be required at the northwest and northeast quadrants of the John Yong Parkway interchange. Right-of-way would also be required at the northeast, southwest and southeast quadrants of the Sand Lake Road interchange to accommodate the new ramps

### **Alternative 6: Sand Lake Interchange (Without Loop Ramp)**

This alternative provides a diamond interchange at Sand Lake Road only. Turnpike traffic wishing to access John Young Parkway and John Young Parkway traffic wishing to access the Turnpike will be required to use the Sand Lake Road interchange. A signalized intersection will be provided at the Sand Lake Road / Turnpike Interchange, which accommodates all movements.

The westbound Sand Lake Road Bridge over the Turnpike would be replaced. This new bridge would be able to accommodate the left turn movements to the Turnpike on-ramps. The eastbound Sand Lake Road bridge would be widened to accommodate a sidewalk on the south side.

Sun-Pass Only Toll Plazas will be located north of Sand Lake Road for the northbound Turnpike entrance from Sand Lake Road and the southbound Turnpike exit to Sand Lake Road.

Additional right-of-way would be required at the four quadrants of the Sand Lake Road interchange to accommodate the new ramps.

### **Alternative 7: Split Diamond Interchange (With Loop Ramp)**

This alternative combines features of Alternatives 3 and 4A. Construction of the interchange at Sand Lake Road would be the same as the proposed for Alternative 4A.

A northbound exit ramp and entrance ramp would be provided at John Young Parkway, similar to Alternative 3. In addition, a southbound exit would be provided for southbound John Young Parkway only. This southbound exit would be a combined exit with southbound traffic exiting for Sand Lake Road, which will be located north of John Young Parkway.

In order to address the weaving concerns along John Young Parkway approaching the Sand Lake Road Single Point Urban Interchange (SPUI), a separate bridge structure and frontage road would be proposed along John Young Parkway. This separate bridge / frontage road would accommodate southbound John Young Parkway traffic exiting for Sand Lake Road and southbound Turnpike traffic exiting for southbound John Young Parkway. A slip ramp from the frontage road to southbound John Young Parkway placed between the Turnpike and Sand Lake Road would allow the exiting Turnpike traffic to access southbound John Young Parkway. The intersection of the southbound Turnpike exit ramp and John Young Parkway frontage road would be signalized.

The northbound and southbound Turnpike Bridges over Shingle Creek would be widened to accommodate the Turnpike entrance and exit ramps from John Young Parkway. This alternative requires the replacement of the end spans of the existing John Young Parkway Bridges in order to accommodate the new Turnpike southbound exit ramp for Sand Lake Road below. The westbound Sand Lake Road Bridge over the Turnpike would be replaced in order to accommodate new northbound and southbound Turnpike auxiliary lanes. This new bridge would also be able to accommodate the left turn movements to the Turnpike on-ramps. The eastbound Sand Lake Road bridge would be widened to accommodate a sidewalk on the south side. A new bridge would be required for



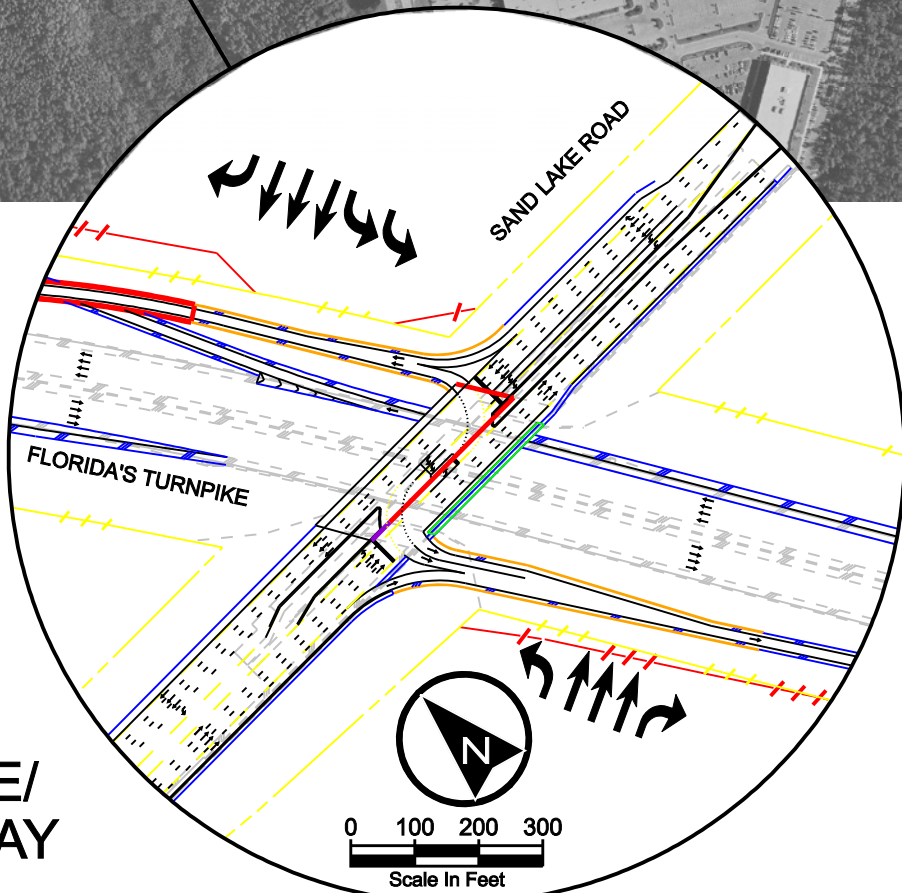
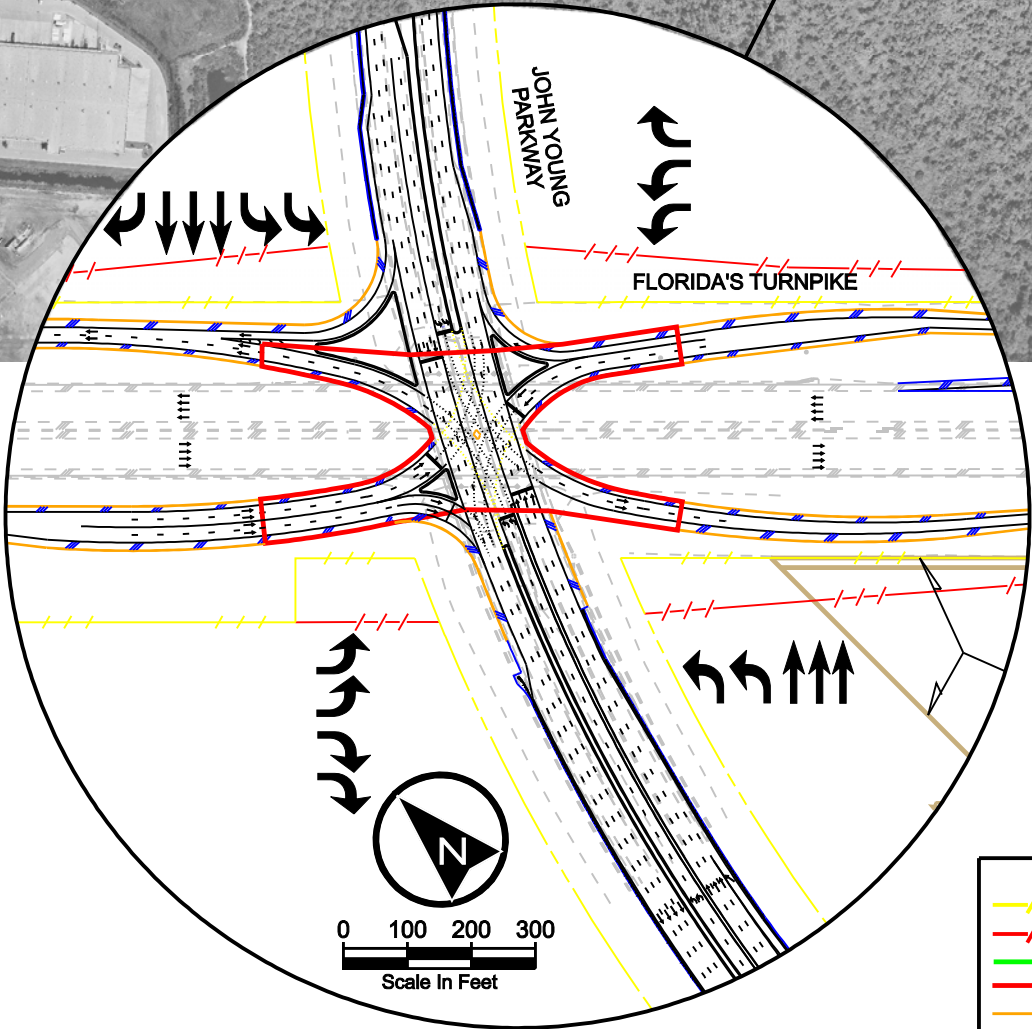
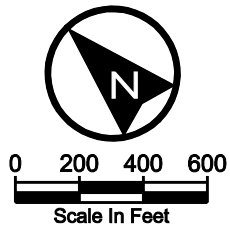
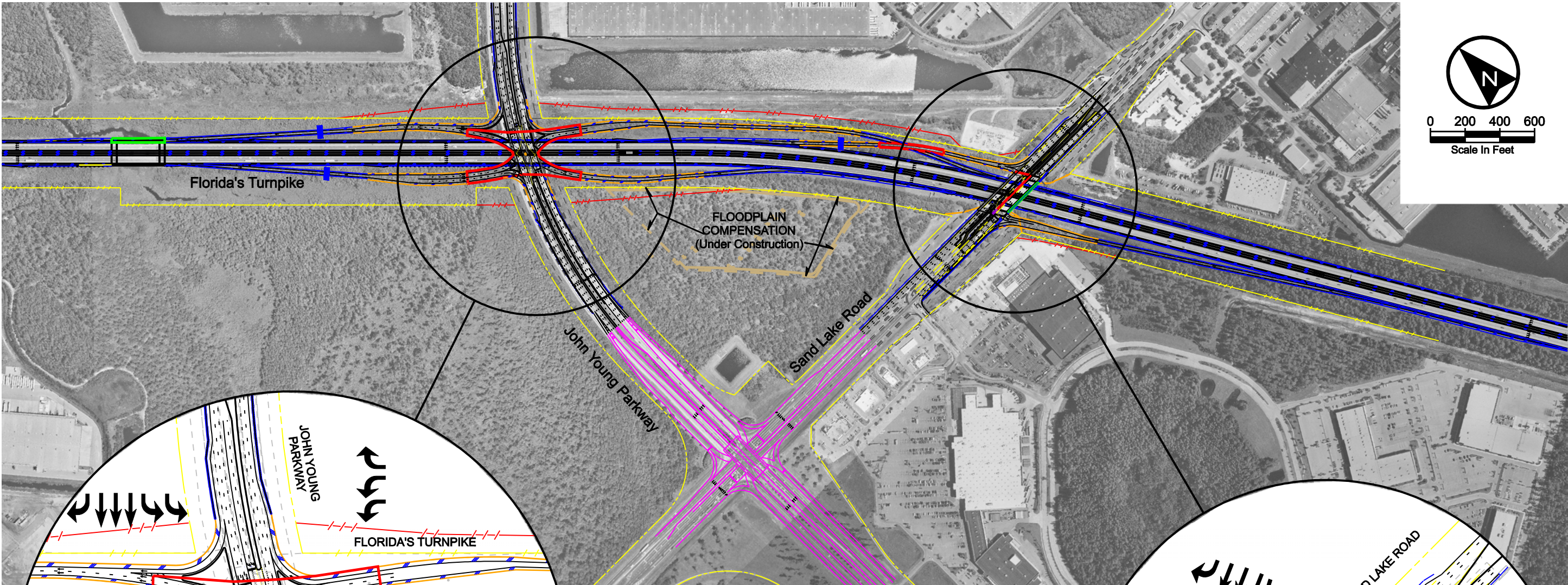
the entrance ramp from Sand Lake Road to northbound Turnpike, where the ramp crosses over the northbound Turnpike exit ramp to John Young Parkway.

Sun-Pass Only Toll Plazas would be located north of John Young Parkway, for the Turnpike entrance and exit ramps to John Young Parkway. A Sun-Pass Only Toll Plaza will be located north of Sand Lake Road for the northbound Turnpike entrance from Sand Lake Road.

Additional right-of-way would be required at the four quadrants of the John Yong Parkway interchange and the northeast, southwest and southeast quadrants of the Sand Lake Road interchange to accommodate the new ramps. Right-of-way would also be required along the northbound and southbound sides of the Turnpike between John Young Parkway and Sand Lake Road.

## Plan View of Alternatives






Legend	
	Existing R-O-W
	Proposed R-O-W
	Bridge Widening
	Proposed Bridge
	Retaining Wall
	Turnpike Toll Plaza

FLORIDA'S TURNPIKE/  
JOHN YOUNG PARKWAY  
ALTERNATIVE 1

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION



Kimley-Horn and Associates, Inc.

Certificate Of Authorization No. 696

Mr. Steven G. Godfrey

P.E. License No. 18499

3660 Maguire Boulevard, Suite 200

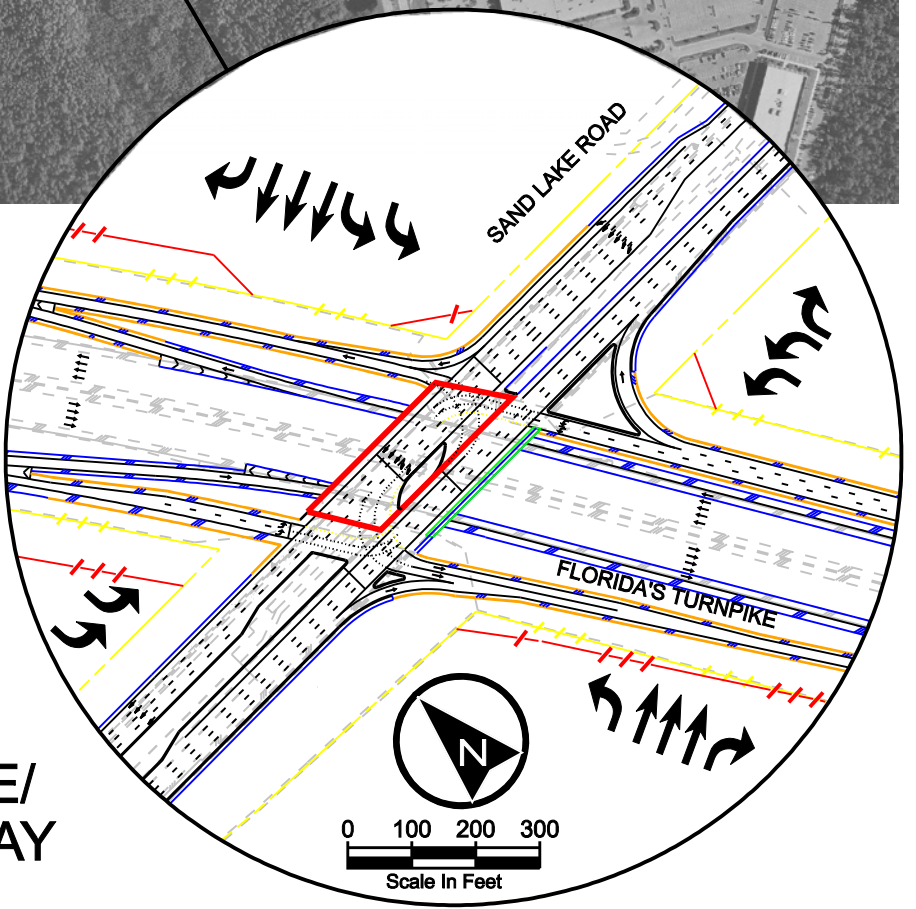
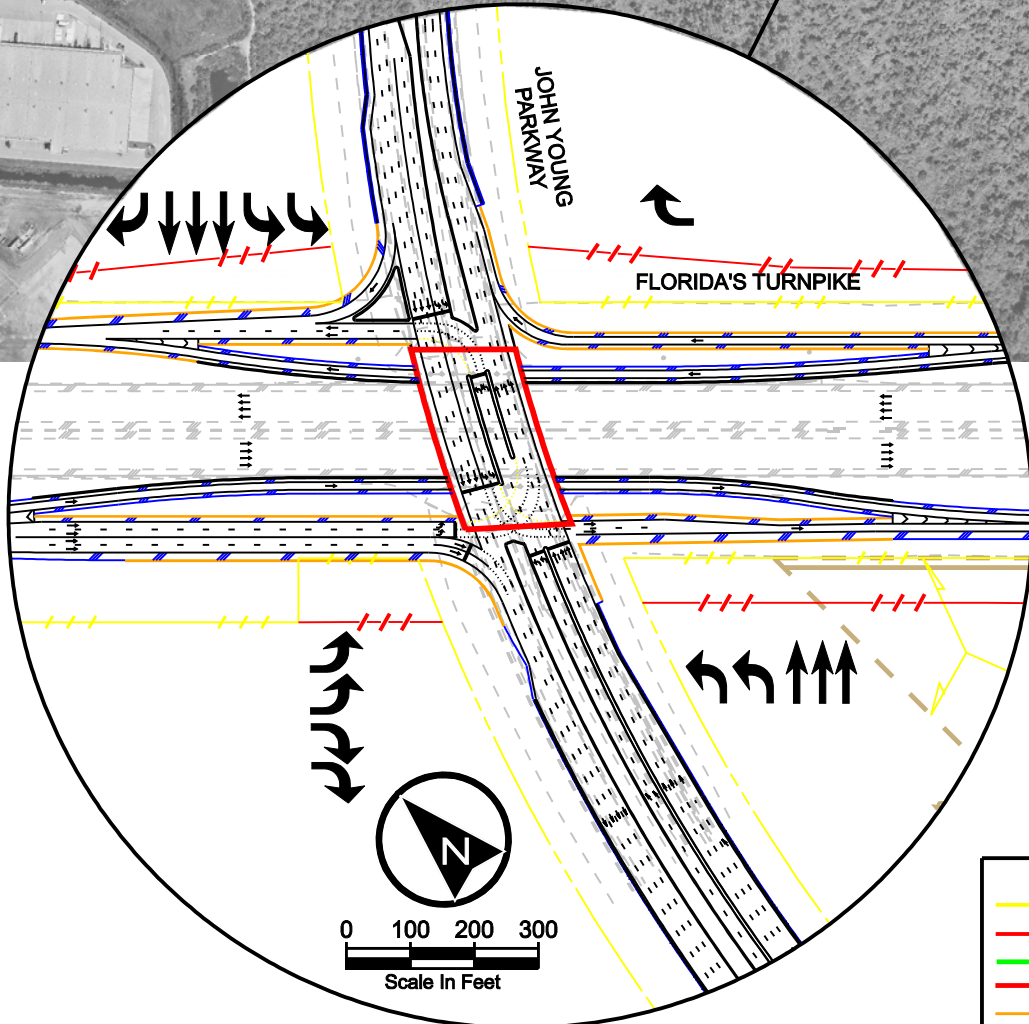
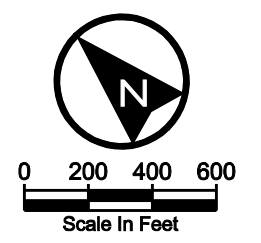
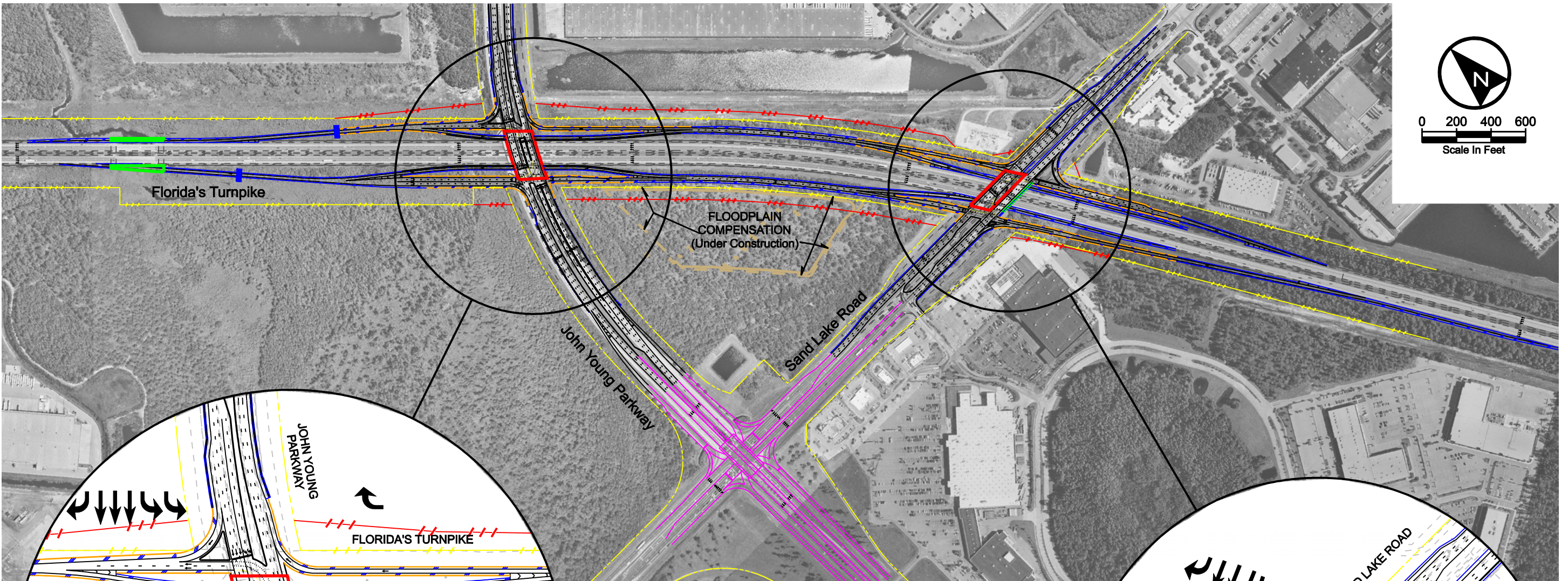
Orlando, Florida 32803

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
482	ORANGE	407143-3-22-01

SINGLE POINT INTERCHANGE

SHEET  
NO.





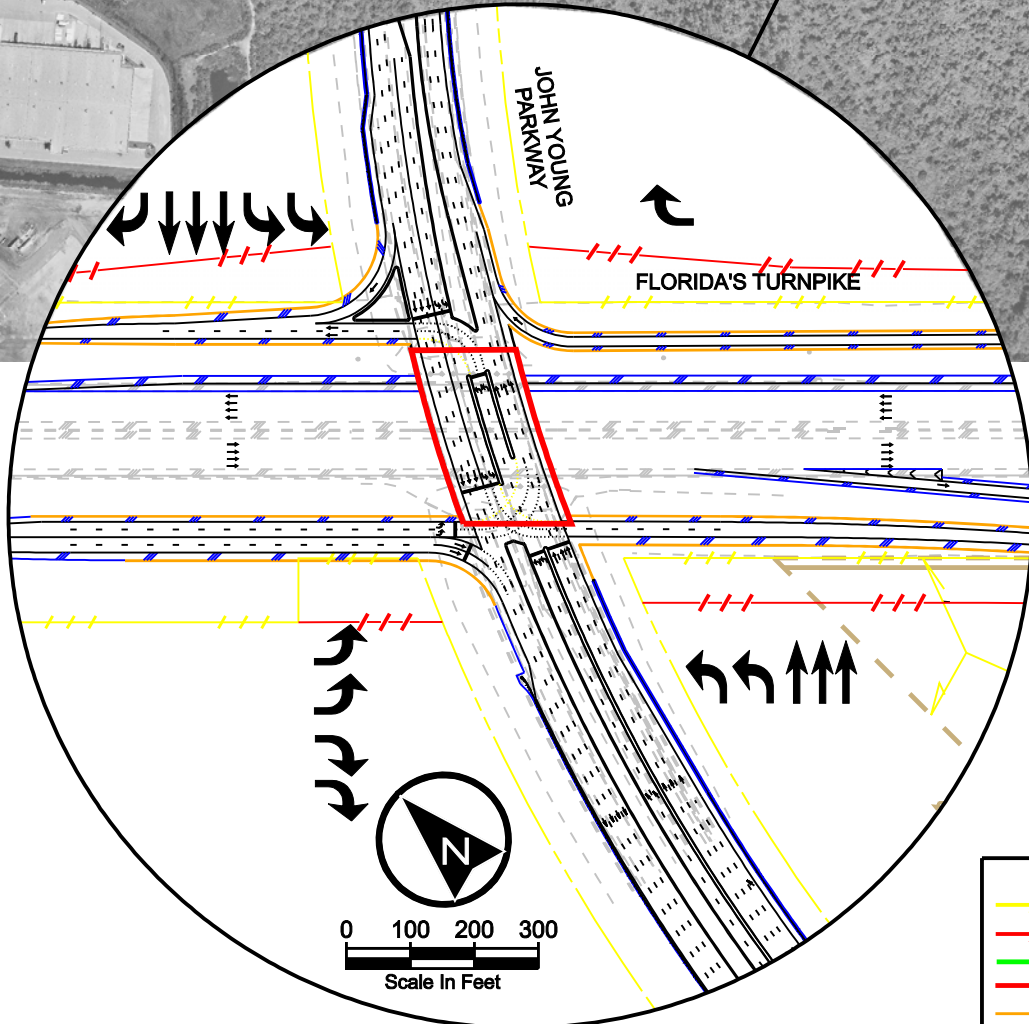
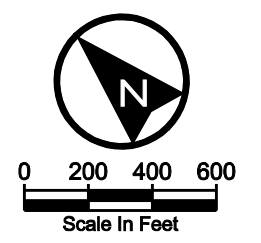
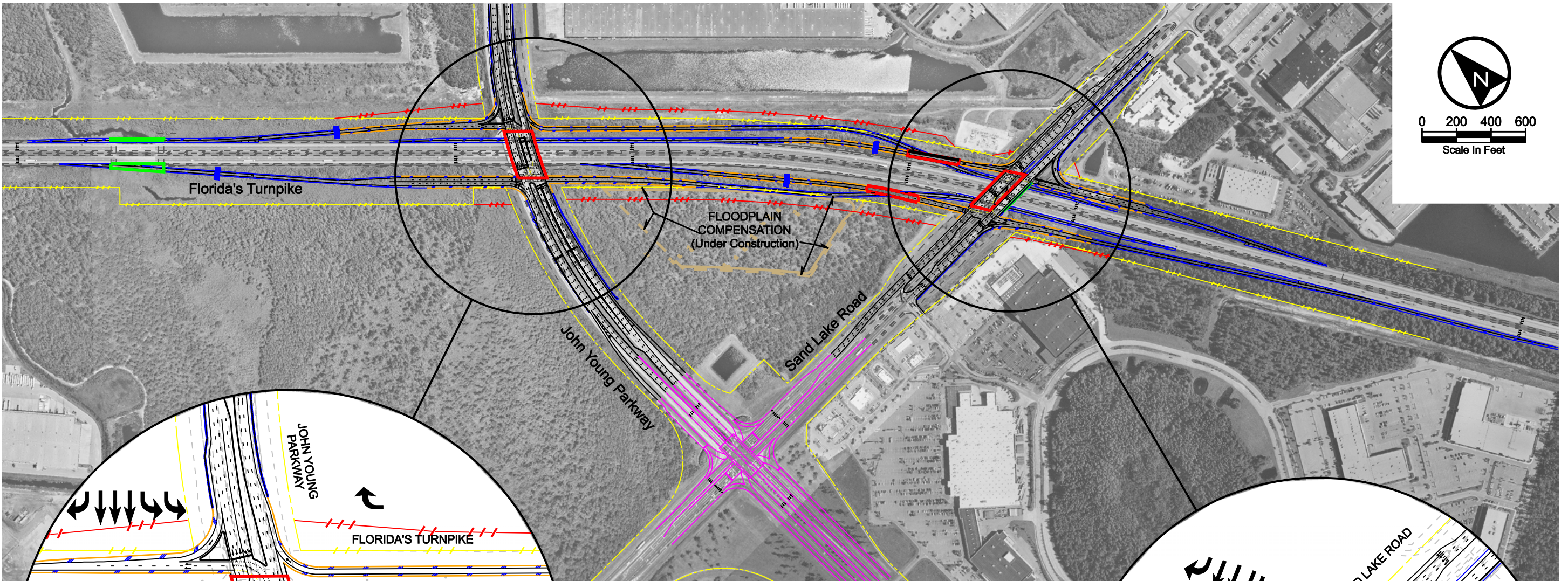
- Legend**
- Existing R-O-W
  - Proposed R-O-W
  - Bridge Widening
  - Proposed Bridge
  - Retaining Wall
  - Turnpike Toll Plaza

FLORIDA'S TURNPIKE/  
JOHN YOUNG PARKWAY  
ALTERNATIVE 2

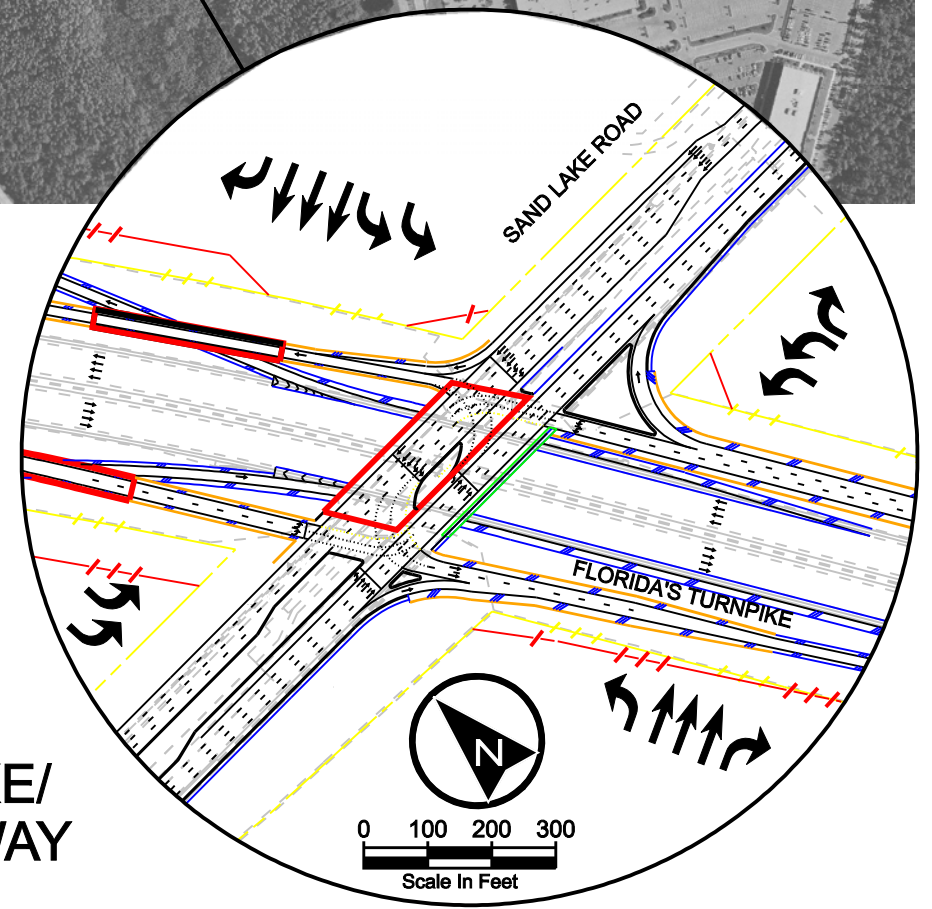
REVISIONS						 Kimley-Horn and Associates, Inc. Certificate Of Authorization No. 696 Mr. Steven G. Godfrey P.E. License No. 18499 3660 Maguire Boulevard, Suite 200 Orlando, Florida 32803	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			SPLIT DIAMOND INTERCHANGE (WEAVE SECTION)	SHEET NO.
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
							482	ORANGE	407143-3-22-01		

NOTICE: THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE SIGNED AND SEALED UNDER RULE 605-23.003, F.A.C.





- Legend**
- Existing R-O-W
  - Proposed R-O-W
  - Bridge Widening
  - Proposed Bridge
  - Retaining Wall
  - Turnpike Toll Plaza

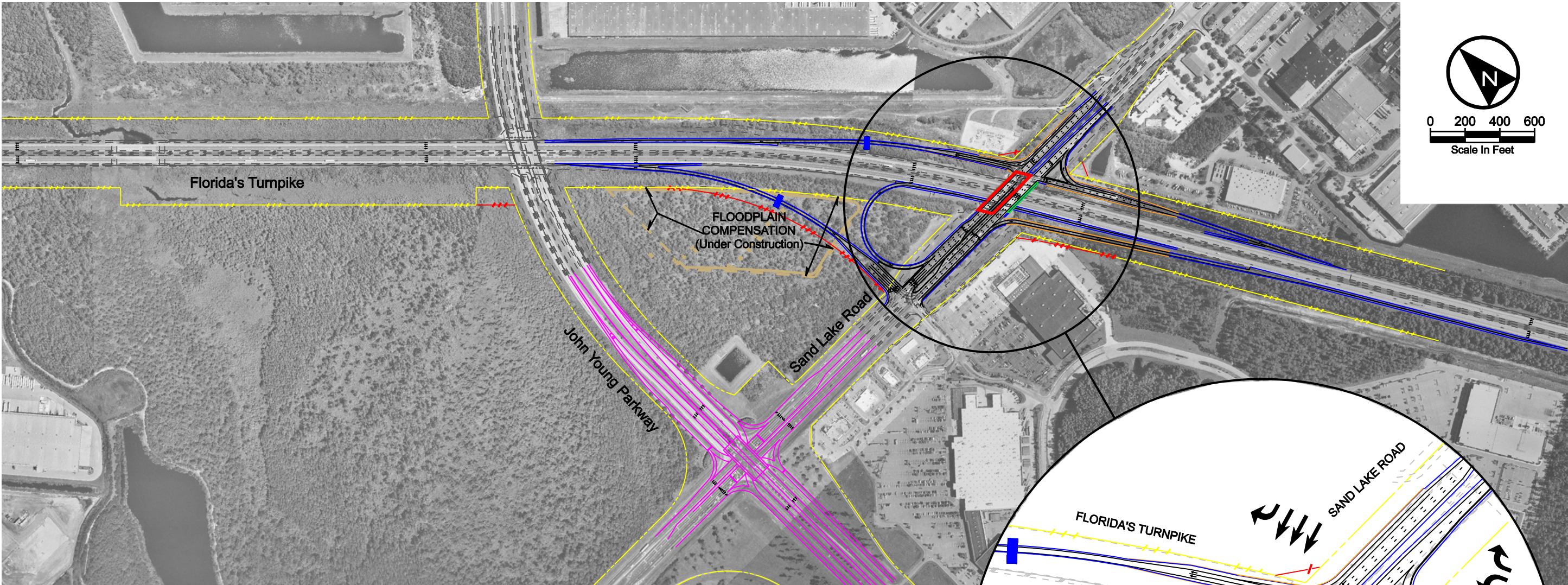


FLORIDA'S TURNPIKE/  
JOHN YOUNG PARKWAY  
ALTERNATIVE 3

REVISIONS						 Kimley-Horn and Associates, Inc. Certificate Of Authorization No. 696 Mr. Steven G. Godfrey P.E. License No. 18499 3660 Maguire Boulevard, Suite 200 Orlando, Florida 32803	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			SPLIT DIAMOND INTERCHANGE (BRAIDED RAMPS)	SHEET NO.
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
							482	ORANGE	407143-3-22-01		

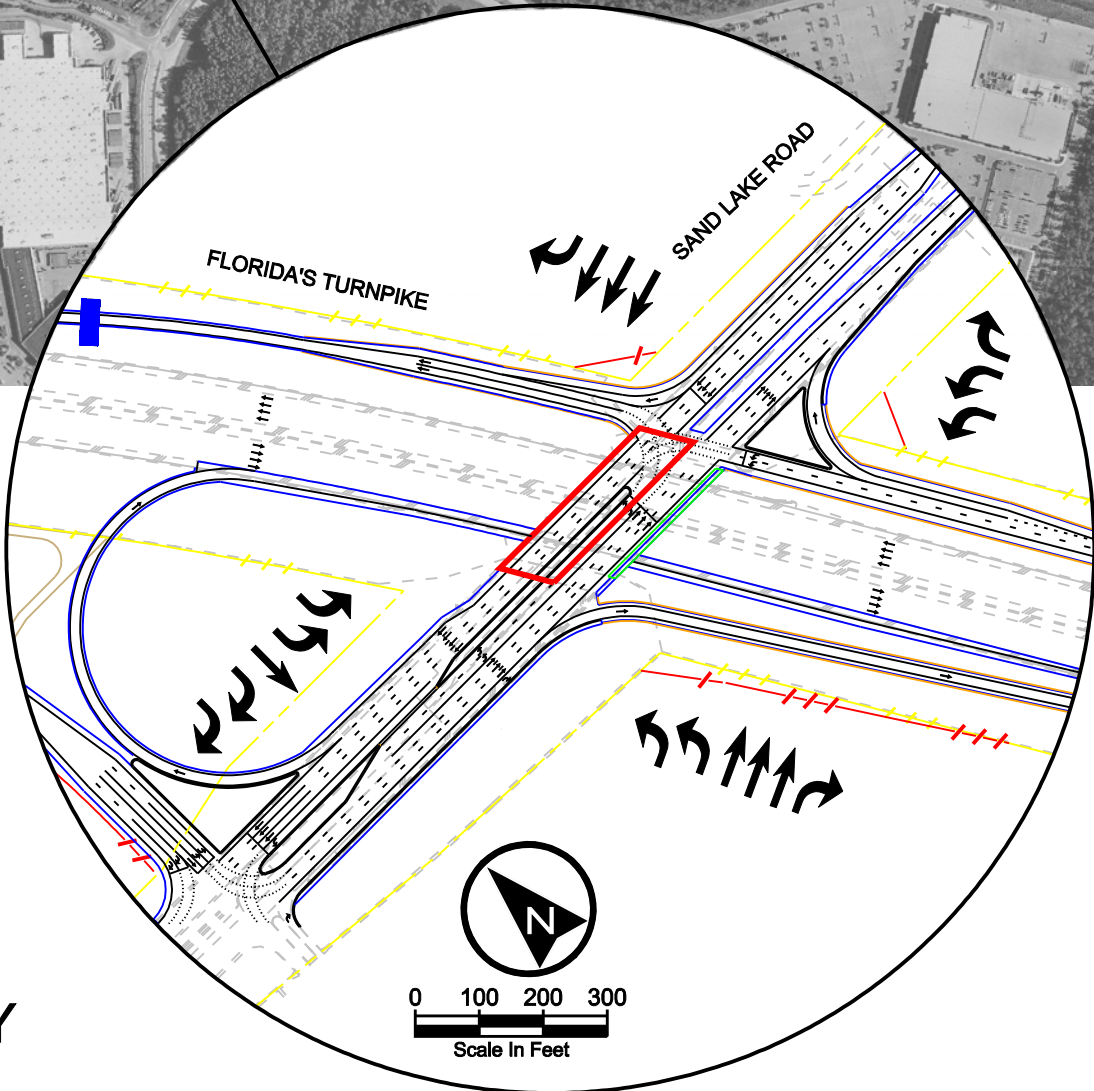
NOTICE: THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE SIGNED AND SEALED UNDER RULE 605-23.003, F.A.C.






Legend					
	Existing R-O-W		Proposed R-O-W		Bridge Widening
	Proposed Bridge		Retaining Wall		Turnpike Toll Plaza

FLORIDA'S TURNPIKE/  
JOHN YOUNG PARKWAY  
ALTERNATIVE 4



REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

 Kimley-Horn and Associates, Inc.  
Certificate Of Authorization No. 696  
Mr. Steven G. Godfrey  
P.E. License No. 18499  
3660 Maguire Boulevard, Suite 200  
Orlando, Florida 32803

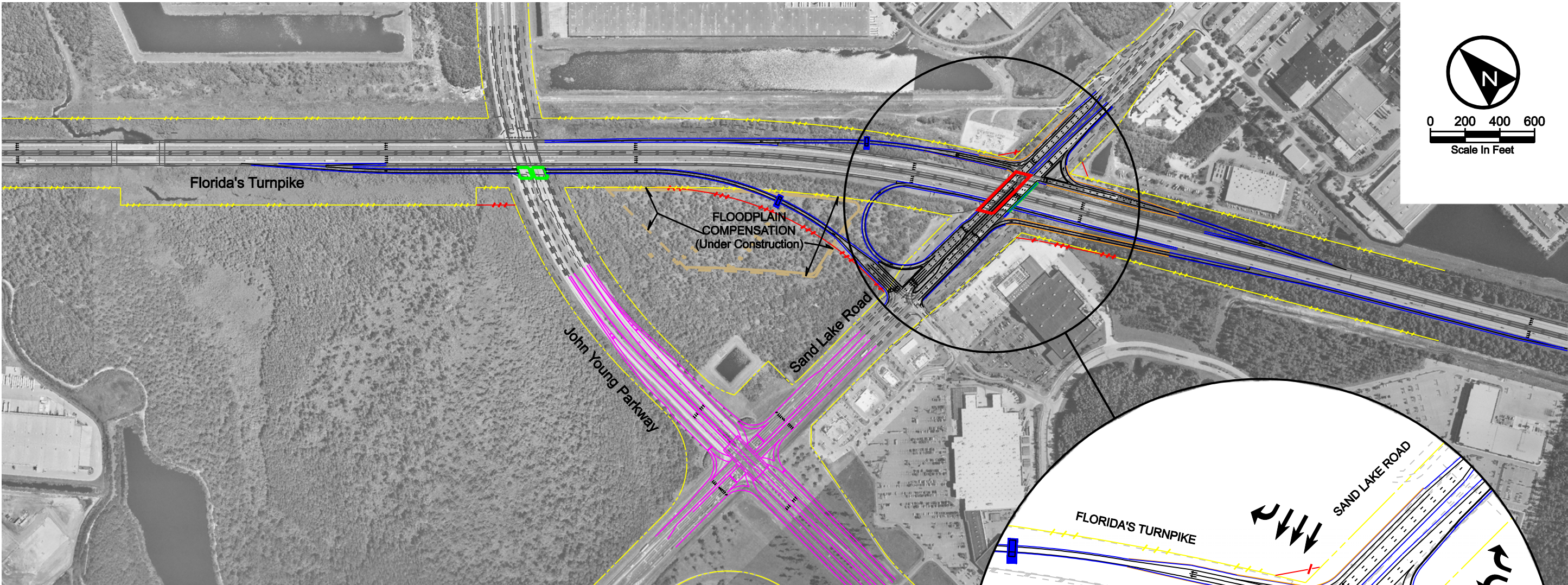
STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
482	ORANGE	407143-3-22-01

**SAND LAKE INTERCHANGE  
(WITH LOOP RAMP)**

SHEET  
NO.

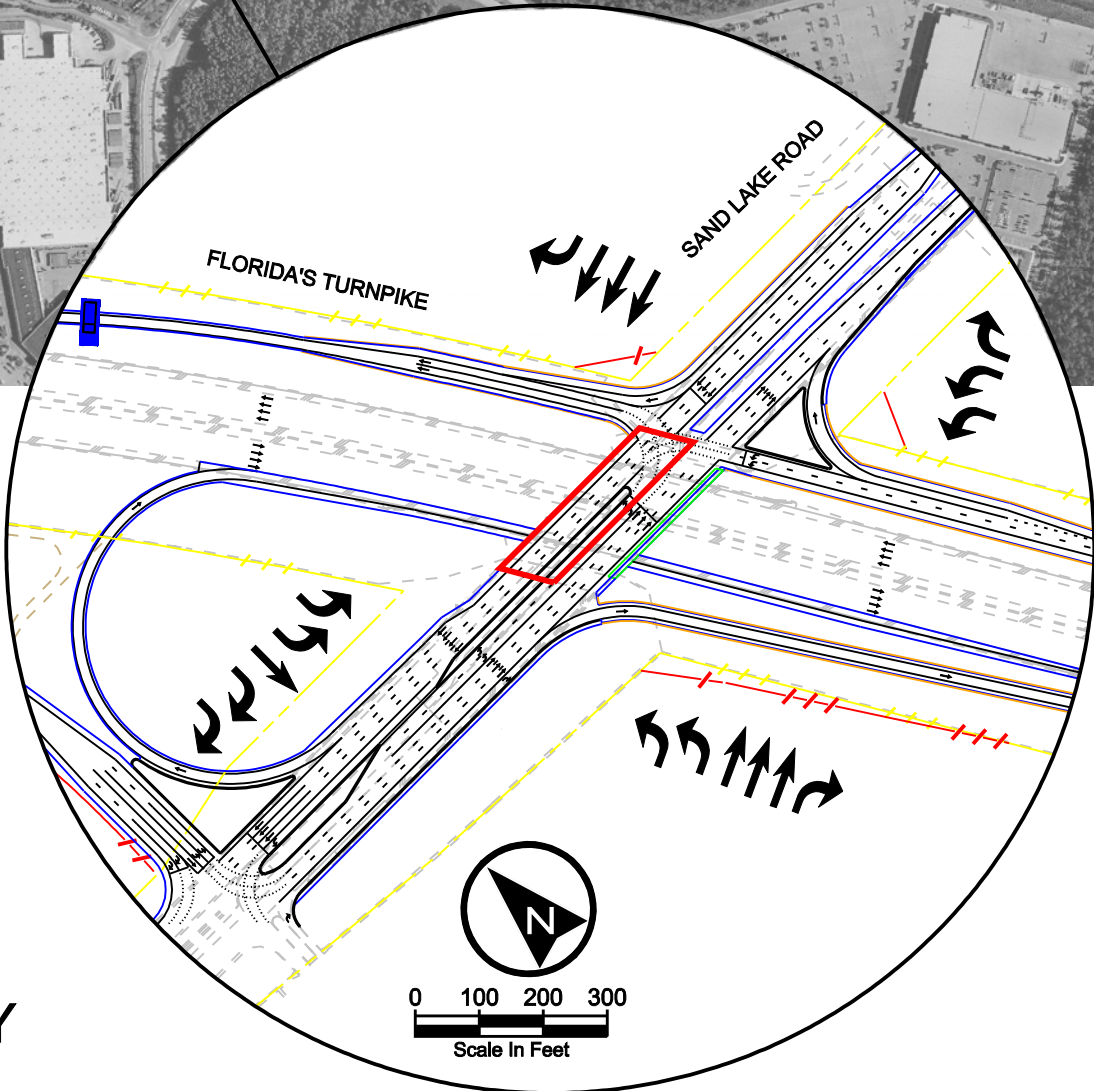
NOTICE: THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE SIGNED AND SEALED UNDER RULE 605-23.003, F.A.C.






Legend					
	Existing R-O-W		Proposed R-O-W		Bridge Widening
	Proposed Bridge		Retaining Wall		Turnpike Toll Plaza

FLORIDA'S TURNPIKE/  
JOHN YOUNG PARKWAY  
ALTERNATIVE 4A



REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

 Kimley-Horn and Associates, Inc.  
Certificate Of Authorization No. 696  
Mr. Steven G. Godfrey  
P.E. License No. 18499  
3660 Maguire Boulevard, Suite 200  
Orlando, Florida 32803

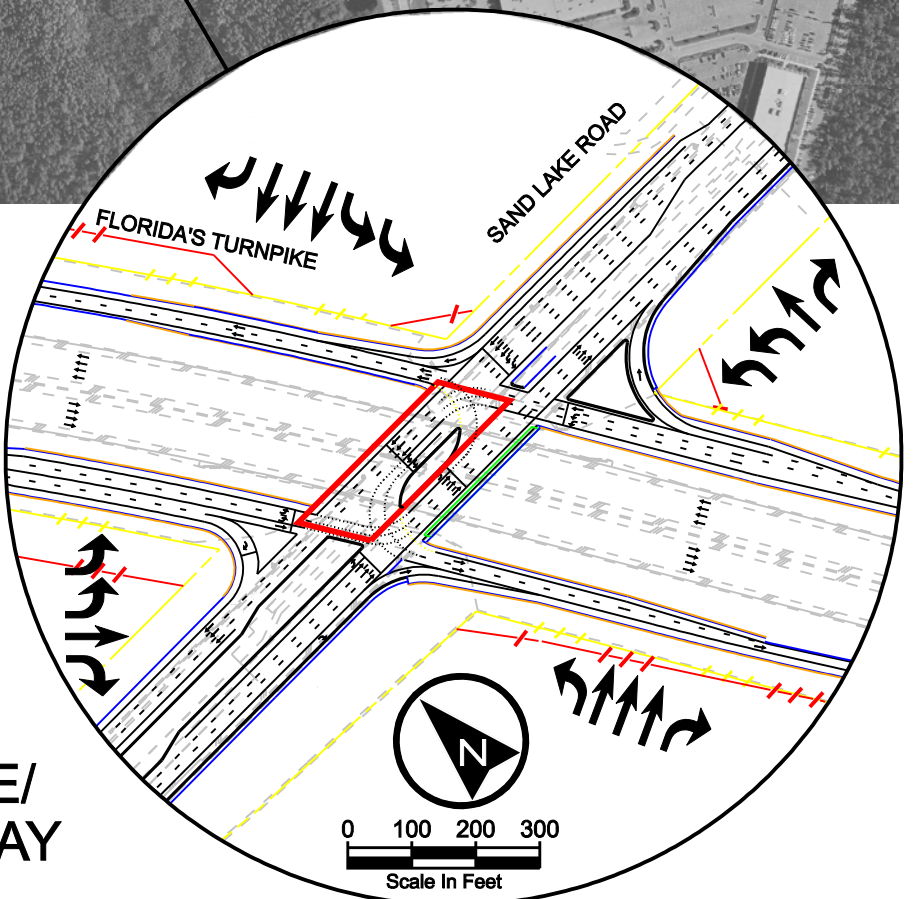
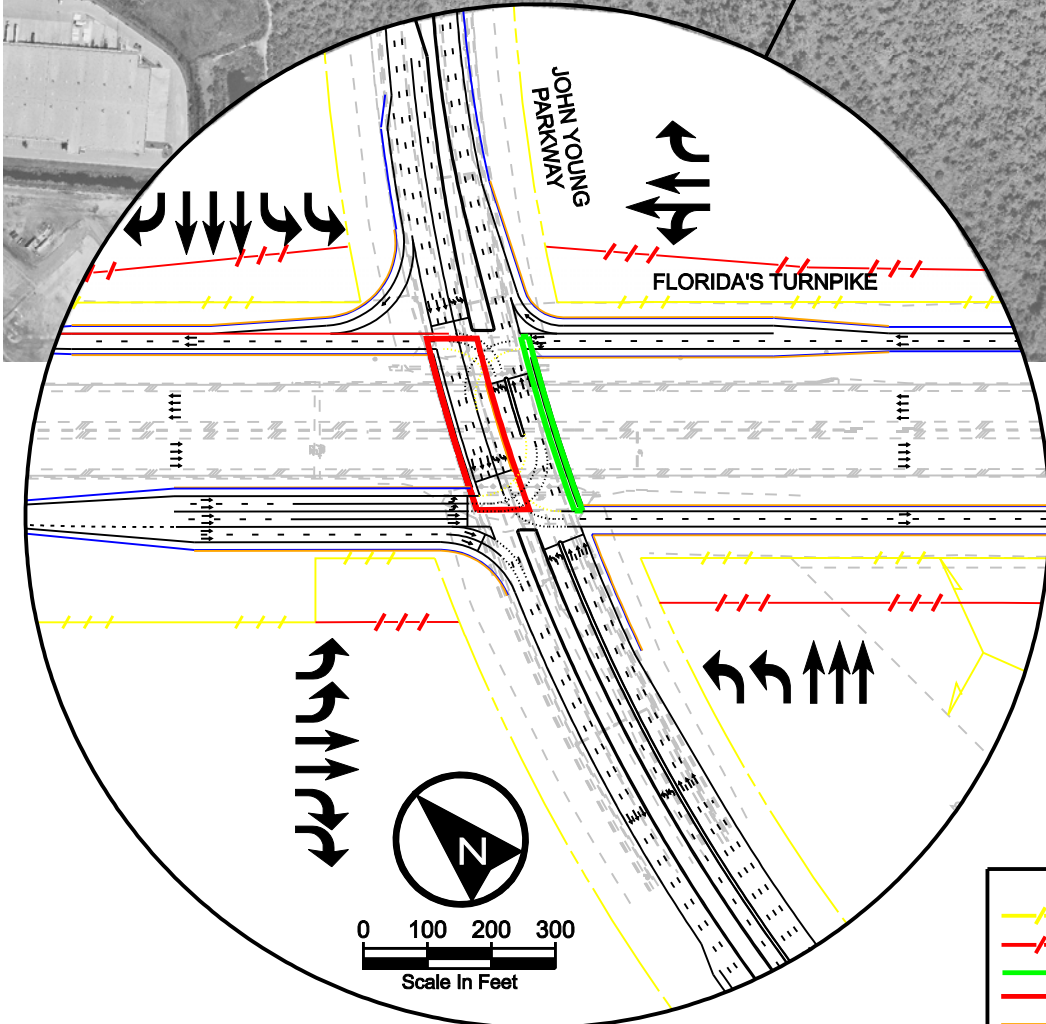
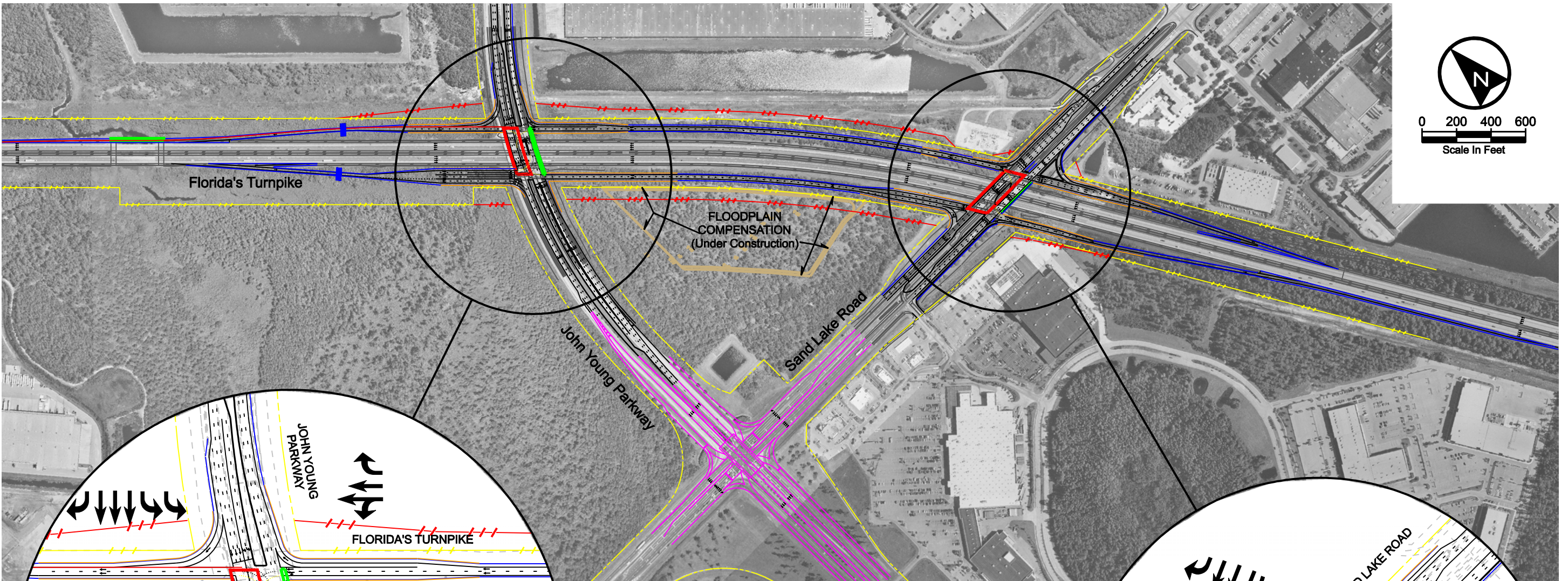
STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
482	ORANGE	407143-3-22-01

**SAND LAKE INTERCHANGE  
(WITH LOOP RAMP)**

SHEET  
NO.

NOTICE: THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE SIGNED AND SEALED UNDER RULE 605-23.003, F.A.C.





- Legend**
- Existing R-O-W
  - Proposed R-O-W
  - Bridge Widening
  - Proposed Bridge
  - Retaining Wall
  - Turnpike Toll Plaza

FLORIDA'S TURNPIKE/  
JOHN YOUNG PARKWAY  
ALTERNATIVE 5

REVISIONS						 Kimley-Horn and Associates, Inc. Certificate Of Authorization No. 696 Mr. Steven G. Godfrey P.E. License No. 18499 3660 Maguire Boulevard, Suite 200 Orlando, Florida 32803	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			SPLIT DIAMOND INTERCHANGE (FRONTAGE ROADS)	SHEET NO.
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
							482	ORANGE	407143-3-22-01		

\$USERS\$

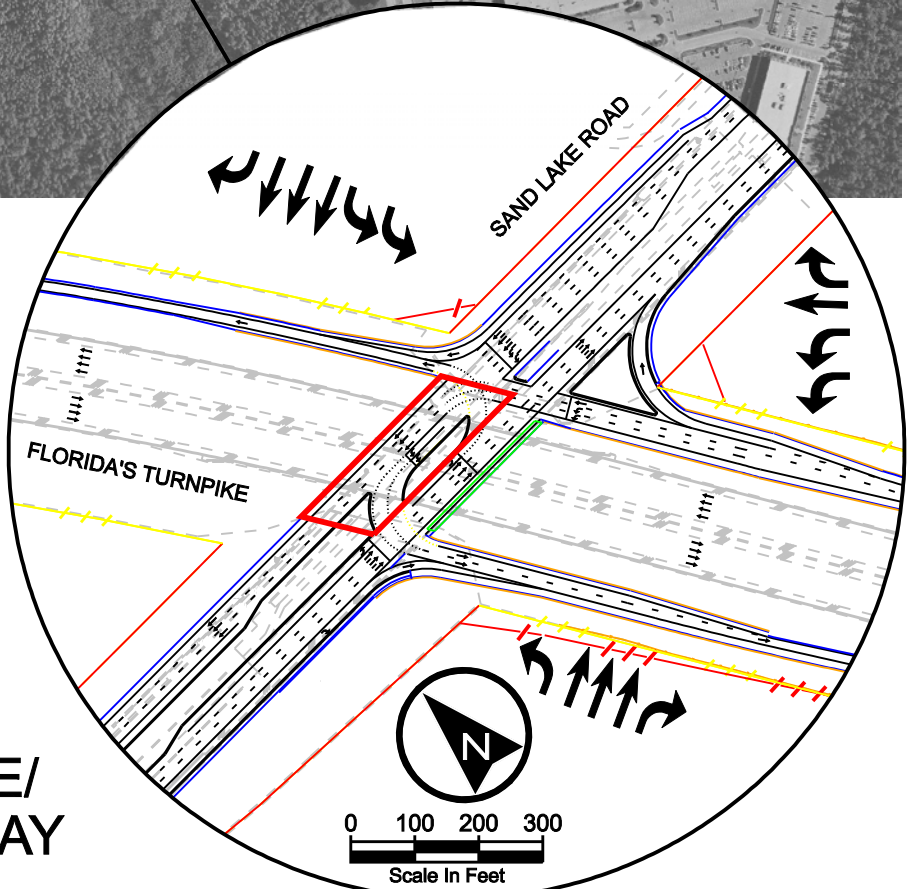
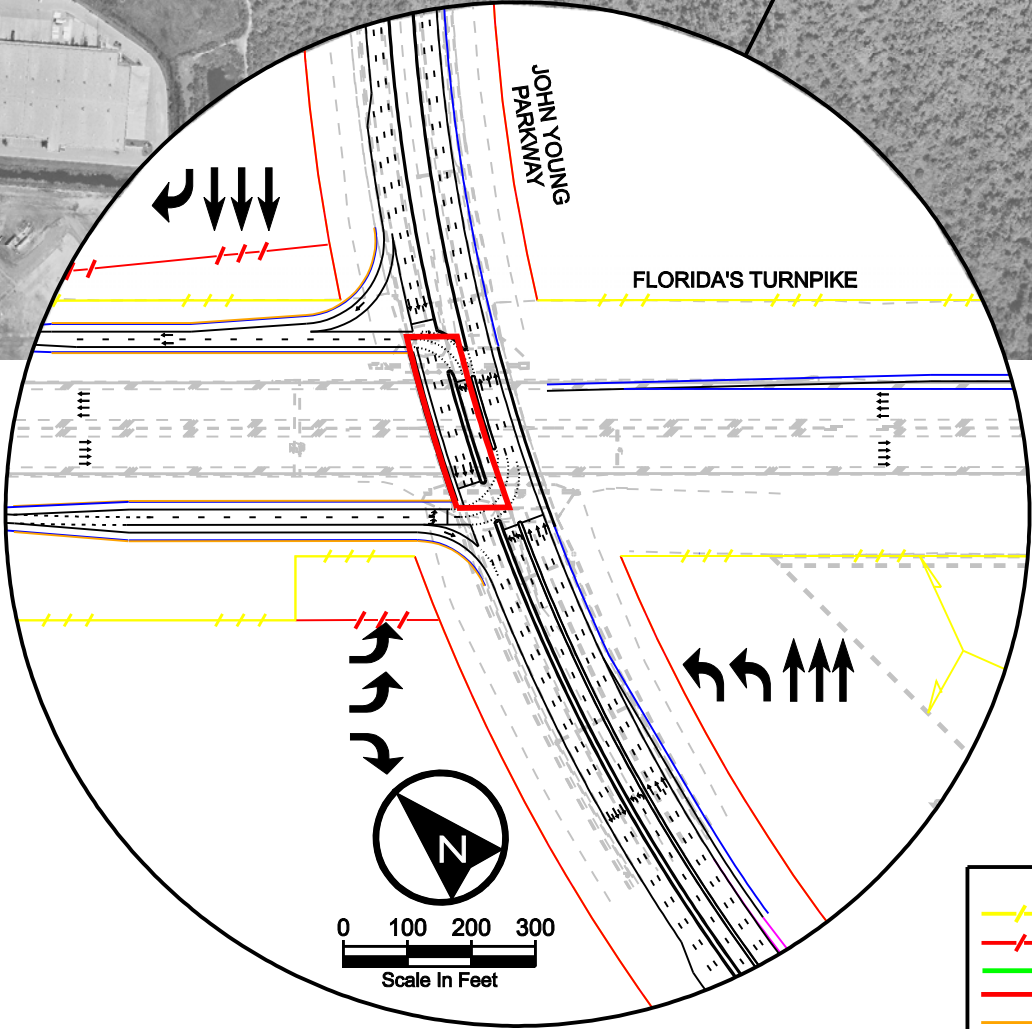
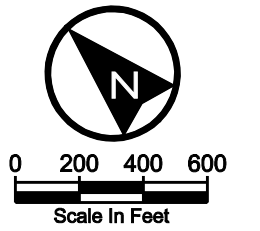
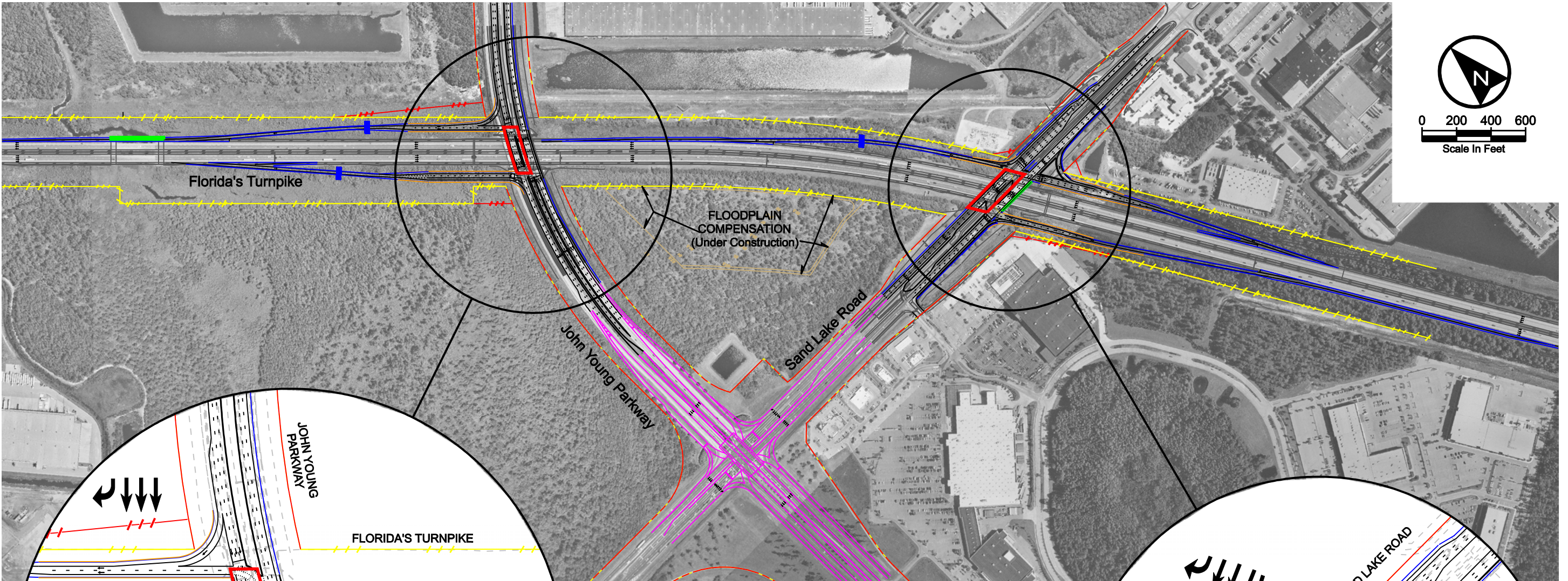
\$DATES\$

\$TIMES\$

\$FILES\$

NOTICE: THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE SIGNED AND SEALED UNDER RULE 605-23.003, F.A.C.






- Legend**
- Existing R-O-W
  - Proposed R-O-W
  - Bridge Widening
  - Proposed Bridge
  - Retaining Wall
  - Turnpike Toll Plaza

FLORIDA'S TURNPIKE/  
JOHN YOUNG PARKWAY  
ALTERNATIVE 5A

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION



Kimley-Horn and Associates, Inc.  
Certificate Of Authorization No. 696  
Mr. Steven G. Godfrey  
P.E. License No. 18499  
3660 Maguire Boulevard, Suite 200  
Orlando, Florida 32803

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
482	ORANGE	407143-3-22-01

SPLIT DIAMOND INTERCHANGE

\$USERS\$

\$DATES\$

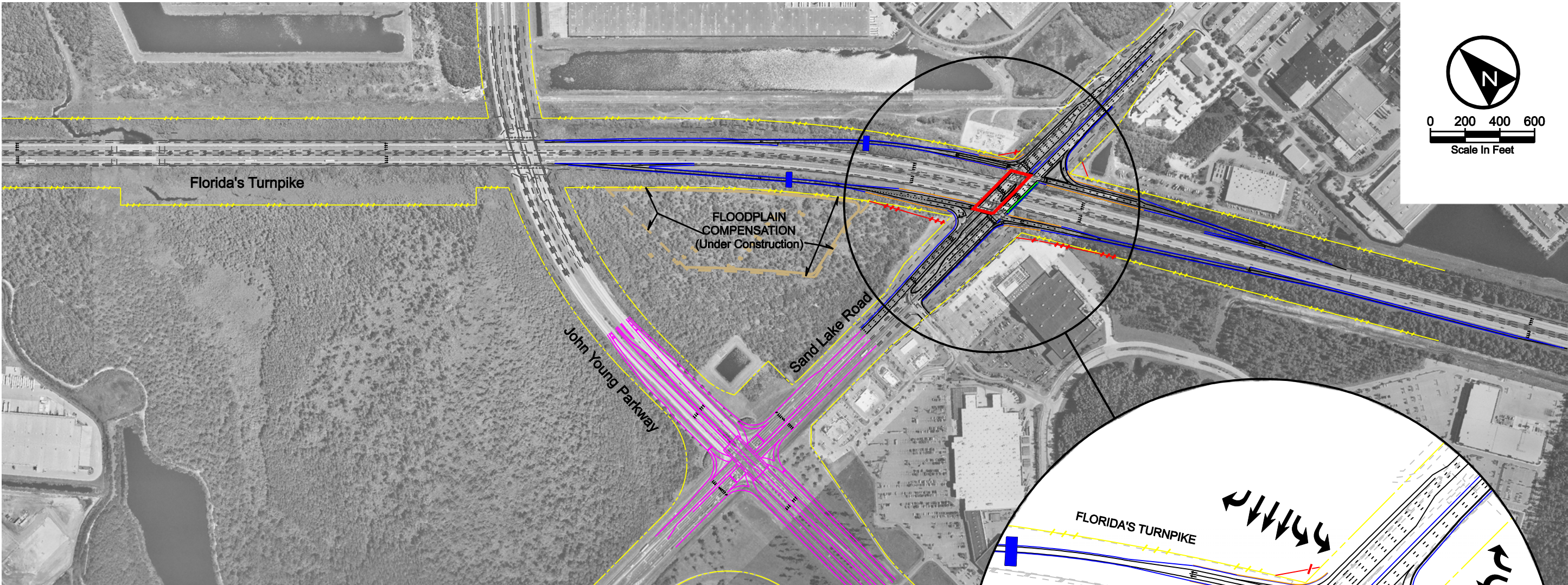
\$TIMES\$

\$FILES\$

SHEET NO.

NOTICE: THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE SIGNED AND SEALED UNDER RULE 605-23.003, F.A.C.

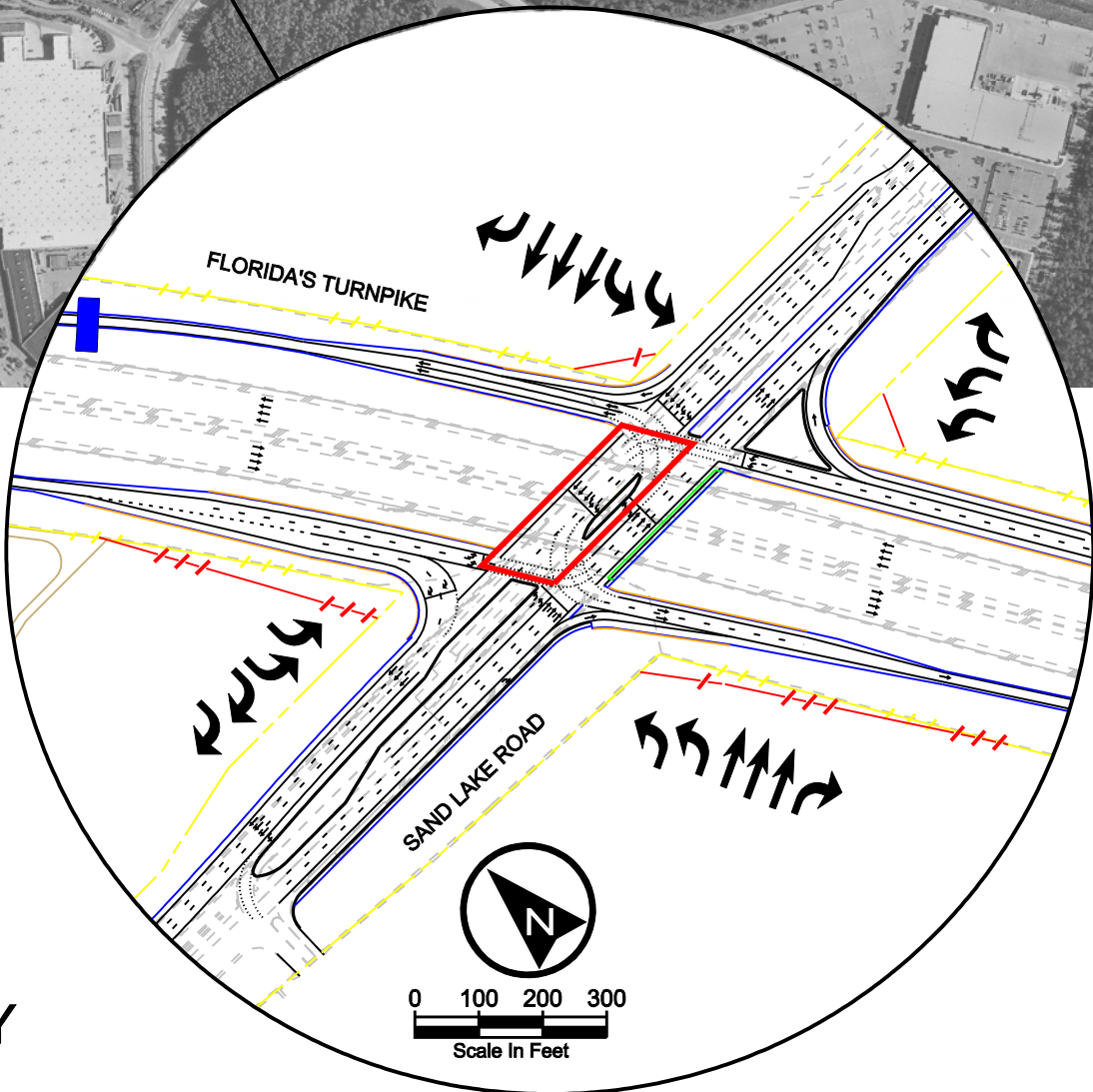





**Legend**

- Existing R-O-W
- Proposed R-O-W
- Bridge Widening
- Proposed Bridge
- Retaining Wall
- Turnpike Toll Plaza

FLORIDA'S TURNPIKE/  
JOHN YOUNG PARKWAY  
ALTERNATIVE 6



REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION



Kimley-Horn and Associates, Inc.

Certificate Of Authorization No. 696

Mr. Steven G. Godfrey

P.E. License No. 18499

3660 Maguire Boulevard, Suite 200

Orlando, Florida 32803

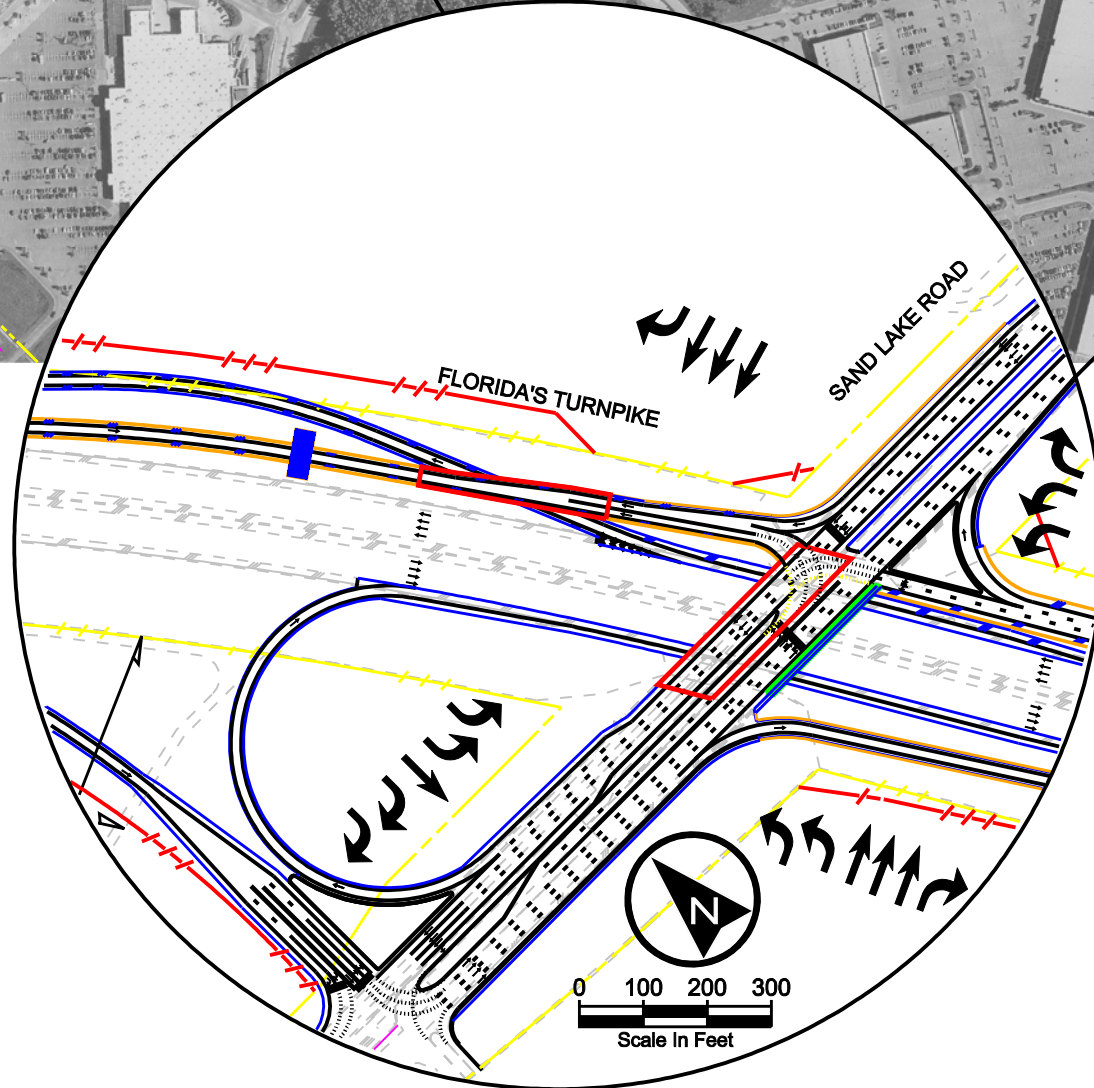
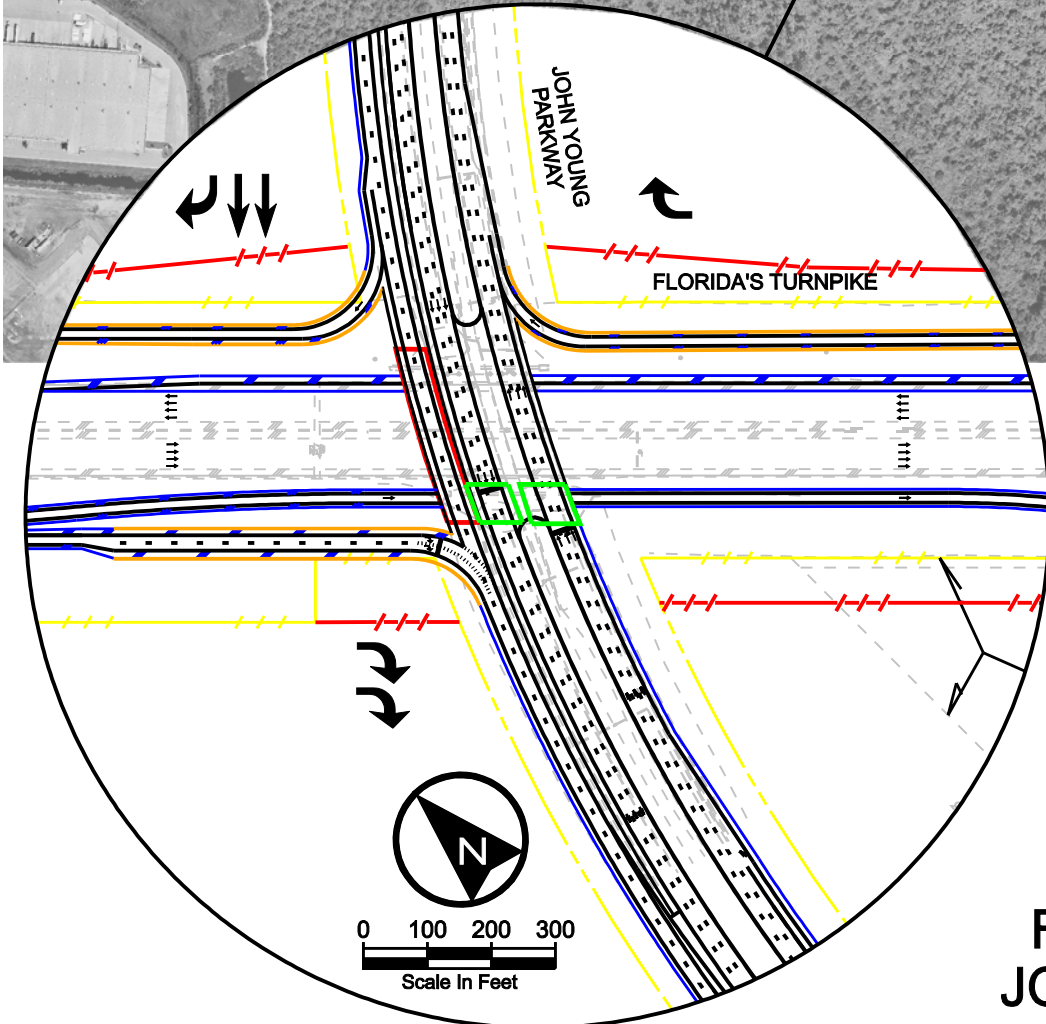
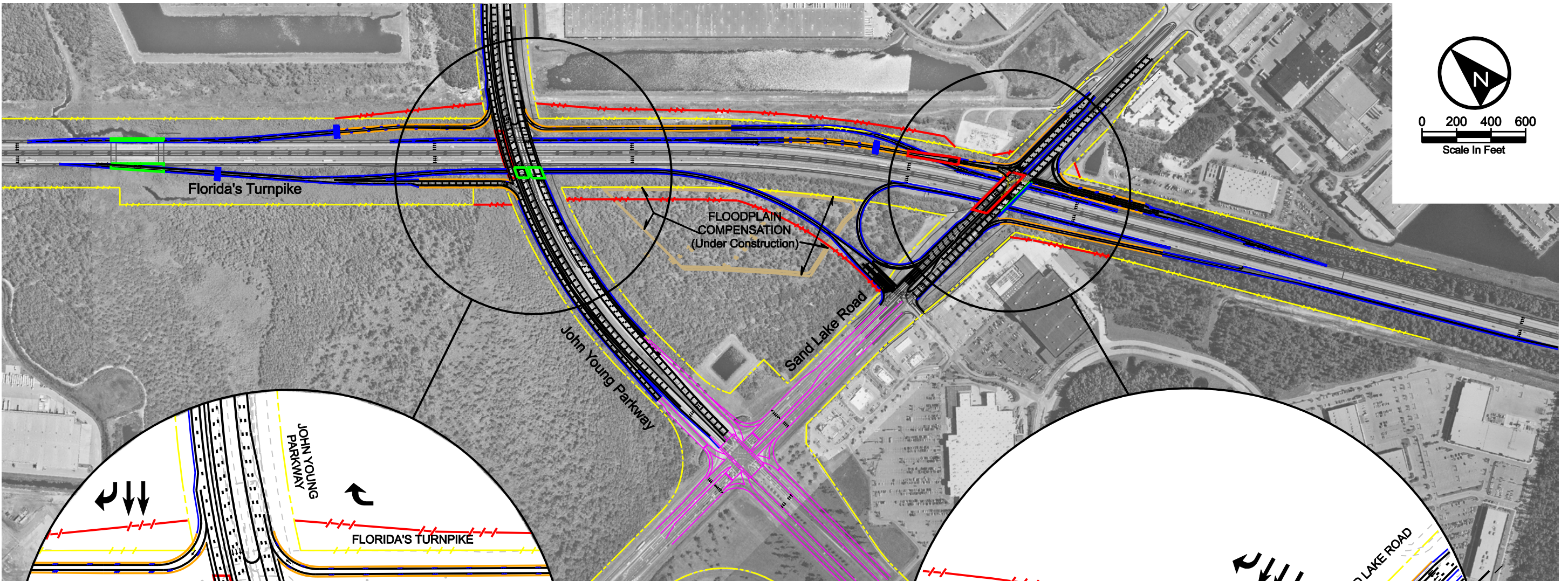
STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
482	ORANGE	407143-3-22-01

SAND LAKE INTERCHANGE  
(WITHOUT LOOP RAMP)

SHEET  
NO.

NOTICE: THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE SIGNED AND SEALED UNDER RULE 605-23.003, F.A.C.






- Legend**
- Existing R-O-W
  - Proposed R-O-W
  - Bridge Widening
  - Proposed Bridge
  - Retaining Wall
  - Turnpike Toll Plaza

**FLORIDA'S TURNPIKE/  
JOHN YOUNG PARKWAY  
ALTERNATIVE 7**

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION



Kimley-Horn and Associates, Inc.  
Certificate Of Authorization No. 696  
Mr. Steven G. Godfrey  
P.E. License No. 18499  
3660 Maguire Boulevard, Suite 200  
Orlando, Florida 32803

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
482	ORANGE	407143-3-22-01

**SPLIT DIAMOND INTERCHANGE  
(WITH LOOP RAMP)**

SHEET NO.

NOTICE: THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE SIGNED AND SEALED UNDER RULE 605-23.003, F.A.C.



## Critical Considerations



## **Interchange Alternatives at Florida's Turnpike/ John Young Parkway/Sand Lake Road Critical Considerations**

### **Alternative 1:**

- Complex Traffic Control Plan and would cause the greatest interruption to Turnpike and John Young Parkway traffic
- Temporary bridge needed if John Young Parkway is 6-laned or John Young Parkway/Sand Lake Road SPUI is built before bridge widening
- Excessive delays at John Young Parkway/Turnpike SPUI
- Excessive delays at John Young Parkway/Sand Lake Road SPUI
- Complex guide signing required
- High cost

### **Alternative 2:**

- Unacceptable weave distance available without braiding
- Complex guide signing required
- High cost

### **Alternative 3:**

- Higher complexity in signing SB off movements
- Triple rights at John Young Parkway SB needed for acceptable operation
- John Young Parkway bridge widening should proceed opening of John Young Parkway/Sand Lake Road SPUI and 6-laning of John Young Parkway to avoid throw away bridge widening
- Higher floodplain impact
- Higher wetland impact
- High cost

### **Alternative 4:**

- Limited sight distance for SB exit ramp due to John Young Parkway structure
- Fourth EB lane needed on Sand Lake Road from John Young Parkway to Turnpike
- Low wetland impacts
- Low floodplain impacts
- Low cost

### **Alternative 4a:**

- End span replacement of the John Young Parkway Bridges should be done before SPUI at John Young Parkway/Sand Lake Road is completed or John Young Parkway is 6-laned to avoid temporary bridge construction
- Moderate floodplain impacts
- Moderate wetland impacts
- Moderate cost

### **Alternative 6:**

- Triple rights on SB Sand Lake ramp needed to provide acceptable conditions on Sand Lake Road
- Low wetland impacts
- Low floodplain impacts
- Low cost

### **Alternative 7:**

- Fourth EB lane needed on Sand Lake Road from John Young Parkway to Turnpike
- Higher wetland impacts
- Higher floodplain impacts
- High cost

**Conclusions**

- Alternatives 4, 4A, and 6 should be considered further
  - Alternative 4 vs. 4A depends on policy decision of ramp departure point
  - Alternative 4/4A vs. 6 depends on traffic operations analysis to test operations of closely spaced ramps for Alternative 6.

# Alternatives Evaluation Matrix



SR 482 PD&E Study Turnpike Interchange Alternatives Evaluation Matrix Page 1 of 2									
	No Build Alternative	Alternative 1		Alternative 2		Alternative 3		Alternative 4	
Description	No Interchange	Single Point Diamond at John Young Parkway		Split Diamond with Intermediate Ramps and Weave Section		Split Diamond with Braided Ramps		Sand Lake Interchange with Loop and Exit Past John Young Parkway	
Key Issues Affecting Alternatives Feasibility	N/A	High southbound right volumes cannot function without signalization due to distance to Sand Lake Road ramp. Triple rights still result in unacceptable delay at southbound off-ramp. In addition, cost is much greater than other alternatives. Alternative is not feasible.		Weave section is not of adequate length for safe operations. Alternative is not feasible.		Excessive delay at John Young Parkway south ramp can be resolved by using triple rights on off-ramp.		A fourth lane should be provided on Sand Lake Road to connect John Young Parkway to Turnpike southbound on-ramp. This will resolve deficiency at Sand Lake Road southbound off-ramp.	
Impacts to Adjacent Roads									
John Young Parkway Impact at Interchange Intersections	None	NB/SB		NB	SB	NB	SB	NB	SB
		F—136 (F—541)*		E—69.0 (F—107.6)*	F—120.2 (F—172.5)*	E—69.0 (F—107.6)*	F—120.2 (F—172.5)*	None	None
Sand Lake Road Impact at Interchange Intersections	None	NB	SB	NB	SB	NB	SB	NB	SB
		A—7.1 (B—18.7)*	A—9.4 (E—66.4)*	C—27.6 (F—103.7)*	D—39.0 (F—110.3)*	C—27.6 (F—103.7)*	D—39.0 (F—110.3)*	D—39.6 (F—87.4)*	F—130 (F—266.8)*
John Young Parkway/Sand Lake Road Interchange Impact	F—104.6 (F—178.9)*	F—153.4 (F—228)*		E—77.2 (F—160.3)*		E—77.2 (F—160.3)*		F—87.9 (F—171.8)*	
Natural Environmental Impacts									
Wetlands	None	30.6		31.6		31.6		4.6	
Floodplains	None	9.7		13.5		14.3		4.2	
Right-of-Way Impacts									
Parcels	None	3		3		5		2	
Acres	None	4.5		4.6		4.6		0.8	
MOT	N/A	Complex on John Young Parkway - requires construction of "throw away" structure		Complex on John Young Parkway - requires construction of "throw away" structure		Complex on John Young Parkway - requires construction of "throw away" structure		Moderate	
Drainage									
Pond Area (Retention and Floodplain Mitigation)	None	13.1		19.3		19.6		9.8	
Cost									
Right-of-Way	\$0.0	\$3.1		\$3.6		\$3.6		\$1.0	
Mitigation	\$0.0	\$2.9		\$3.0		\$3.0		\$0.4	
Construction	\$0.0	\$86.0		\$67.0		\$78.0		\$26.0	
Design /CEI (35%)	\$0.0	\$30.1		\$23.5		\$27.3		\$9.1	
Total	\$0.0	\$122.1		\$97.1		\$111.9		\$36.5	
Reasons Not Preferred		LOS-John Young Parkway/Sand lake Road Cost		Weave section deficiency Cost		Cost Delay to John Young Parkway		Preferred**	

\*LOS 2020-Delay 2020 (LOS 2030-Delay 2030)  
\*\*Operational analysis needed to determine best solution

SR 482 PD&E Study

Turnpike Interchange Alternatives Evaluation Matrix

Page 2 of 2

	Alternative 4A		Alternative 5		Alternative 5A		Alternative 6		Alternative 7		
Description	Sand Lake Interchange with Loop and Exit Before John Young Parkway		Split Diamond with Frontage Roads		Split Diamond without Frontage Roads		Sand Lake Diamond		Sand Lake Interchange with loop and Supplemental John Young Parkway Ramps		
Key Issues Affecting Alternatives Feasibility	A fourth lane should be provided to connect John Young Parkway to Turnpike from southbound on-ramp. This will resolve deficiency at Sand Lake Road southbound ramp.		Excessive delay northbound at John Young Parkway due to proximity of Frontage Road volumes. Intersection could be improved by adding a third lane and by adding a third southbound right turn lane at southbound ramp.		Poor operating conditions at John Young Parkway/Sand Lake Road are fatal flaws. Alternative should be eliminated.		Poor operating conditions at southbound ramp can be resolved by adding triple rights.		Poor operating conditions at southbound ramp can be resolved by adding a fourth eastbound lane from Jon Young Parkway to southbound on-ramp.		
Impacts to Adjacent Roads											
John Young Parkway Impact at Interchange Intersections	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB	
	None	None	F—97.9 (F—171.2)*	F—115.3 (F—168.4)*	E—58.3 (F—124.8)*	C—34.5 (F—89.6)*	None	None	None	None	
Sand Lake Road Impact at Interchange Intersections	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB	
	D—39.6 (F—87.4)*	F—130 (F—218.3)*	D—40.8 (F—166.1)*	D—45.7 (F—112.3)*	D—36.6 (F—199.4)*	E—55.8 (F—110.6)*	E—64.2 (F—117.6)*	F—104.2 (F—197.2)*	D—47.4 (F—94.6)*	F—115.4 (F—225.6)*	
John Young Parkway/Sand Lake Road Interchange Impact	F—87.9 (F—171.8)*		E—77.2 (F—160.3)*		F—165.4 (F—290)*		F—87.9 (F—171.8)*		F—87.6 (F—170.9)*		
Natural Environmental Impacts											
Wetlands	17.2		32.1		32.3		4.5		31.4		
Floodplains	10.6		9.1		9.8		1.0		15.9		
Right-of-Way Impacts											
Parcels	2		5		2		2		5		
Acres	0.8		4.7		1.7		0.3		4.6		
MOT	Moderate		Moderate		Moderate		Moderate		Moderate		
Drainage											
Pond Area (Rentention and Floodplain Mitigation)	12.4		19.3		16.2		7.5		16.7		
Cost											
Right-of-Way	\$1.0		\$3.6		\$1.0		\$1.0		\$3.1		
Mitigation	\$1.7		\$3.1		\$3.1		\$0.4		\$3.0		
Construction	\$32.0		\$59.0		\$50.0		\$28.0		\$56.0		
Design /CEI (35%)	\$11.2		\$20.7		\$17.5		\$9.8		\$19.6		
Total	\$45.9		\$86.4		\$71.6		\$39.2		\$81.7		
Reasons Not Preferred	Preferred**		Excessive ramp lanes northbound through at Downstream merge issues Cost		LOS-John Young Parkway/Sand lake Road Cost		Preferred**		Cost		

\*LOS 2020-Delay 2020 (LOS 2030-Delay 2030)

\*\*Operational analysis needed to determine best solution

# **APPENDIX P – TURNPIKE INTERCHANGE TRAFFIC OPERATIONS EVALUATION**





*Operates the statewide  
Turnpike System as  
part of the Florida  
Department of  
Transportation*

JEB BUSH  
Governor

DENVER J. STUTLER, JR.  
Secretary of  
Transportation

JAMES L. ELY  
Executive Director

Turnpike Headquarters:  
Mile Post 263, Bldg. 5315  
Turkey Lake Service Plaza  
Ocoee, FL 34761

Mailing Address:  
P.O. Box 613069  
Ocoee, FL 34761

Tel: 407.532.3999

[www.floridasturnpike.com](http://www.floridasturnpike.com)

## MEMORANDUM

DATE: March 28, 2006  
TO: Mike VanDerHayden  
FROM: Patricia Palumbo  
COPIES: Randy Fox, Nancy Clements, Andrew Velasquez, Kim Samson  
SUBJECT: S.R. 482 (Sand Lake Road) PD&E  
From Turkey Lake Road to Presidents Drive  
Orange County  
Financial Project ID: 407143-3  
Roadway ID: 75002000  
Turnpike Interchange Alternatives  
Traffic Operations Evaluation

As part of the District 5 Project Development and Environment (PD&E) study to widen SR 482 (Sand Lake Road) from four to six lanes, Turnpike Planning performed a traffic operations evaluation of Turnpike interchange alternatives that were also included in the PD&E. Seven interchange alternatives were developed in the PD&E and they include Turnpike access from John Young Parkway, Sand Lake Road, or both. The three alternatives analyzed in this memorandum are the candidate PD&E alternatives recommended for further operational evaluation. These interchange alternatives provide Turnpike access exclusively to Sand Lake Road.


The purpose of this evaluation was to determine which of the three recommended Turnpike interchange alternatives would provide the best operational performance for the Turnpike ramp merge/diverge areas and the Sand Lake Road interchange ramp terminal intersections. The tolling assumption for all interchange alternatives is SunPass only, to/from the north. The alternatives are shown in **Figures 1 through 3** and described as follows:

**Alternative 4:** This alternative has a partial cloverleaf configuration with a single loop ramp in the northwest quadrant of the interchange. The loop ramp is the southbound Turnpike on ramp for westbound Sand Lake Road. Eastbound Sand Lake Road to southbound Turnpike movements are served by a diagonal on ramp in the southwest quadrant. The Turnpike southbound off-ramp is a diagonal ramp that connects to Sand Lake Road at the entrance to the Wal-Mart/Lowes shopping center. Both northbound Turnpike on and off ramps are diagonal ramps in a half-diamond configuration connecting to Sand Lake Road on the east side of the Turnpike Mainline and serving both eastbound and westbound traffic.





FLORIDA'S TURNPIKE/  
JOHN YOUNG PARKWAY  
ALTERNATIVE 4

 Kimley-Horn and Associates, Inc.  
Certificate of Authorization No. 696  
Mr. Steven G. Godfrey  
P.E., License No. 18499  
3660 Maguire Boulevard, Suite 200  
Orlando, Florida 32803

STATE OF FLORIDA  
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
482	ORANGE	407143-3-22-01

SAND LAKE INTERCHANGE  
(WITH LOOP RAMP)

FIG.

1






# FLORIDA'S TURNPIKE/ JOHN YOUNG PARKWAY ALTERNATIVE 4A

Legend	
—	Existing R-O-W
- - -	Proposed R-O-W

REVISIONS		DESCRIPTION	
DATE	BY	DATE	BY



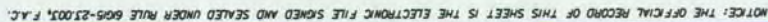
**Kinley-Horn and Associates, Inc.**  
Certification of Authorization No. 006  
Mr. Steven G. Goffing  
P.E., License No. 18499  
3660 Maguire Boulevard, Suite 200  
Orlando, Florida 32803

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION	
ROAD NO.	COUNTY
482	ORANGE
FINANCIAL PROJECT ID	
407143-3-22-01	


**SAND LAKE INTERCHANGE  
(WITH LOOP RAMP)**

FIG. 2





FLORIDA'S TURNPIKE/  
JOHN YOUNG PARKWAY  
ALTERNATIVE 6

 **Kimmey-Horn and Associates, Inc.**  
Certificate Of Authorization No. 696  
Mr. Steven G. Godfrey  
P.E. License No. 18499  
3660 Maguire Boulevard, Suite 200  
Orlando, Florida 32803

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
482	ORANGE	407143-3-22-01

SAND LAKE INTERCHANGE (WITHOUT LOOP RAMP)	FIG. 3
--	--------

File Saved?	12/12/2006	12:45:41 PM	G:\SA482_JRP_TurningIn_Interchange\Map\14332001\roadway\plan\006.dgn
-------------	------------	-------------	--



**Alternative 4a:** This alternative is a variation of Alternative 4 that provides an extended southbound-off ramp with the ramp gore positioned north of the John Young Parkway overpass.

**Alternative 6:** This alternative has a tight diamond interchange configuration with approximately 300 feet between the interchange intersections.

**Traffic Analyses:** Initial traffic operations evaluations of the 2030 design year without a new Turnpike interchange indicated failing conditions (LOS F) and constrained operation on Sand Lake Road. It was therefore determined that 2020 traffic volumes would be evaluated to compare the performance of the three interchange alternatives and to evaluate their advantage over the No Build alternative. As a result, all analyses were performed for the year 2020 AM and PM design hours. **Figures 4 through 7** show the design hour volumes for each analysis period.

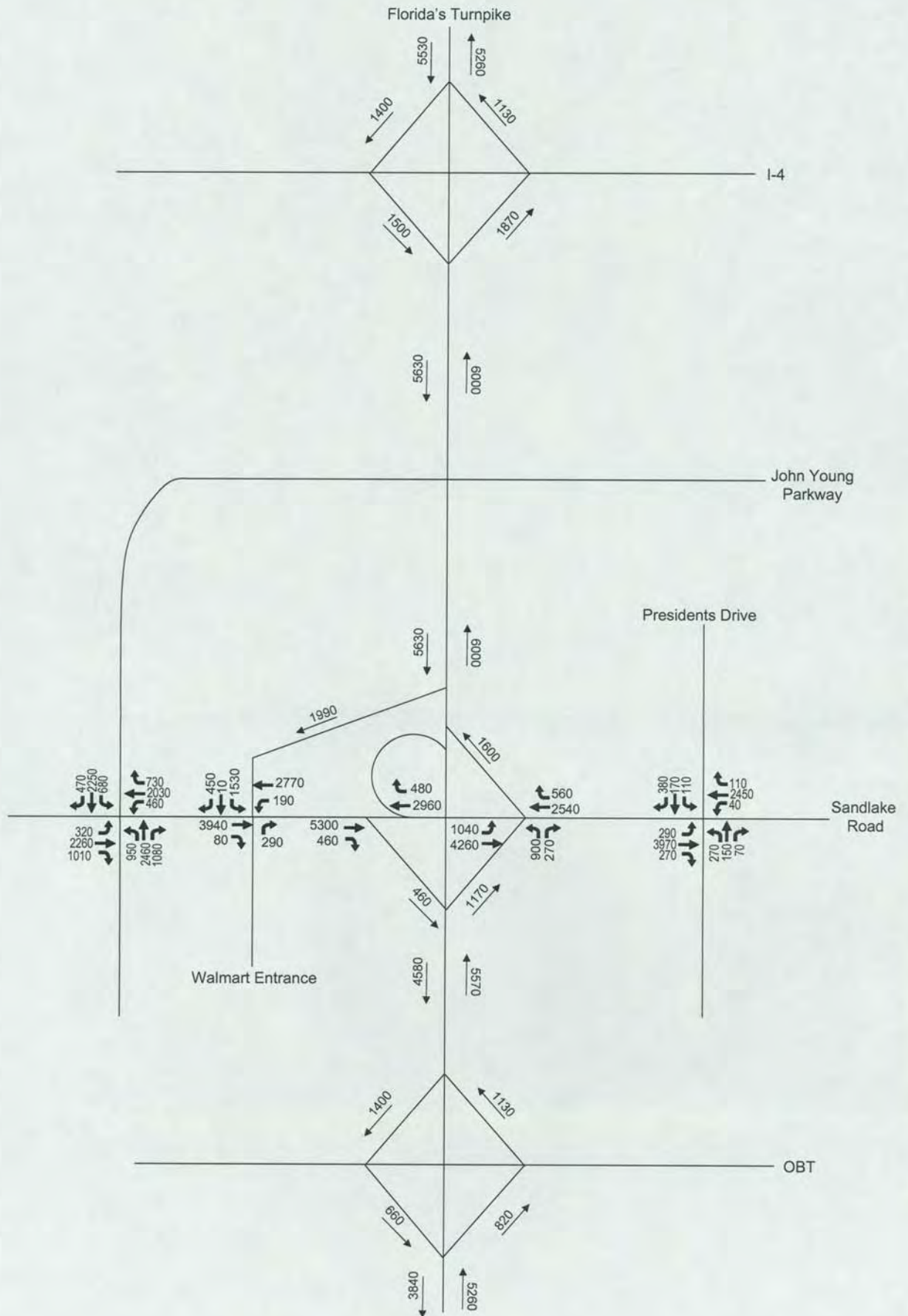
The traffic operational analysis consisted of an evaluation of the isolated ramp merge/diverge areas and the coordinated arterial intersection operations along Sand Lake Road. A micro-simulation analysis was also conducted to evaluate the integrated operation of the Turnpike Mainline, the proposed Sand Lake Road ramps and the John Young Parkway and Sand Lake Road arterials.

#### **Ramp Merge/Diverge Analysis**

**Table 1** shows the results of the ramp merge/diverge analyses using the Highway Capacity Software (HCS). Except for the southbound off ramp, the results indicate that the ramp merge/diverge areas for the three interchange alternatives would operate at an acceptable Level of Service (LOS) D or better in the year 2020. The southbound off ramp to Sand Lake Road would operate at LOS E or worse during the AM and PM peak periods because the demand exceeds the capacity of a one lane ramp. Adding an additional ramp lane with a 1,350 ft. deceleration lane would improve the operation of this ramp to LOS B. Although not reflected in the merge analysis results, an additional northbound on-ramp lane would also be necessary because the northbound on-ramp PM design hour volume exceeds the single-lane ramp roadway capacity. Providing a two-lane northbound on-ramp would prevent queuing of vehicles on Sand Lake Road at the beginning of the northbound on-ramp.

In comparing the alternatives, the HCS analysis indicates no difference in level of service between alternatives for the northbound off, northbound on and southbound off-ramps. This is because HCS considers the isolated operation of the ramp merge/diverge area and the input parameters (i.e., traffic volumes, acceleration/ deceleration length, percent trucks, free-flow speed) are consistent across alternatives. Furthermore, the HCS analysis does not indicate any difference in level of service between Alternatives 4 and 4a as a result the moving the position of the southbound off-ramp gore because HCS does not





PROJECT TRAFFIC  
FOR SR 482 PD&E  
AND DESIGN



Alternatives 4 and 4a  
Preliminary 2020 AM Design Hour Volumes

FINANCIAL NUMBER: 407143-3

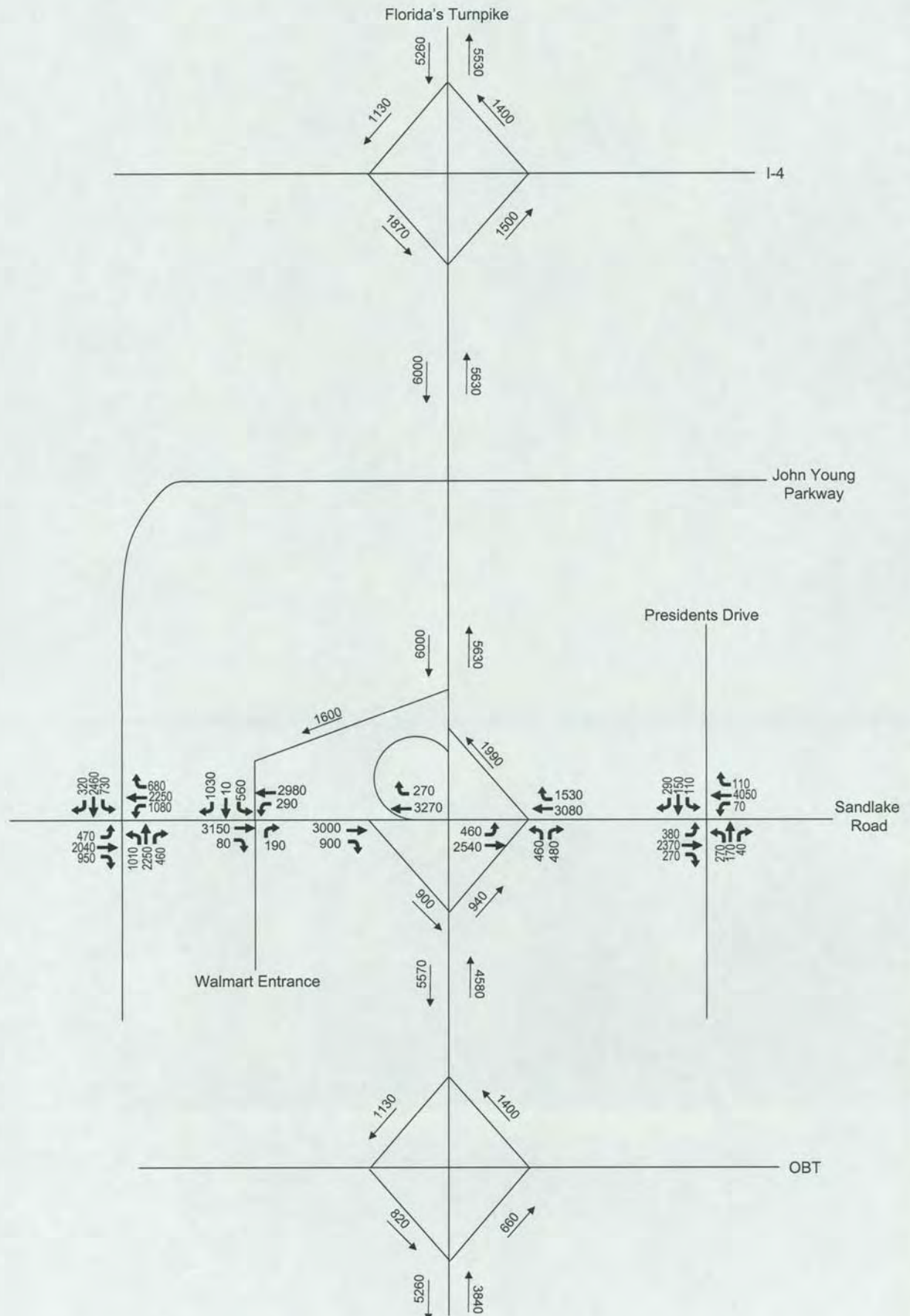
FIGURE: 4



Ghyabi & Associates, Inc.  
Engineering & Planning

7575 Dr. Phillips Blvd, Suite 225, Orlando, FL 32819  
Telephone: (407) 351-8733 Fax: (407) 351-4247





**PROJECT TRAFFIC  
FOR SR 482 PD&E  
AND DESIGN**



**Alternative 4 and 4a  
Preliminary 2020 PM Design Hour Volumes**

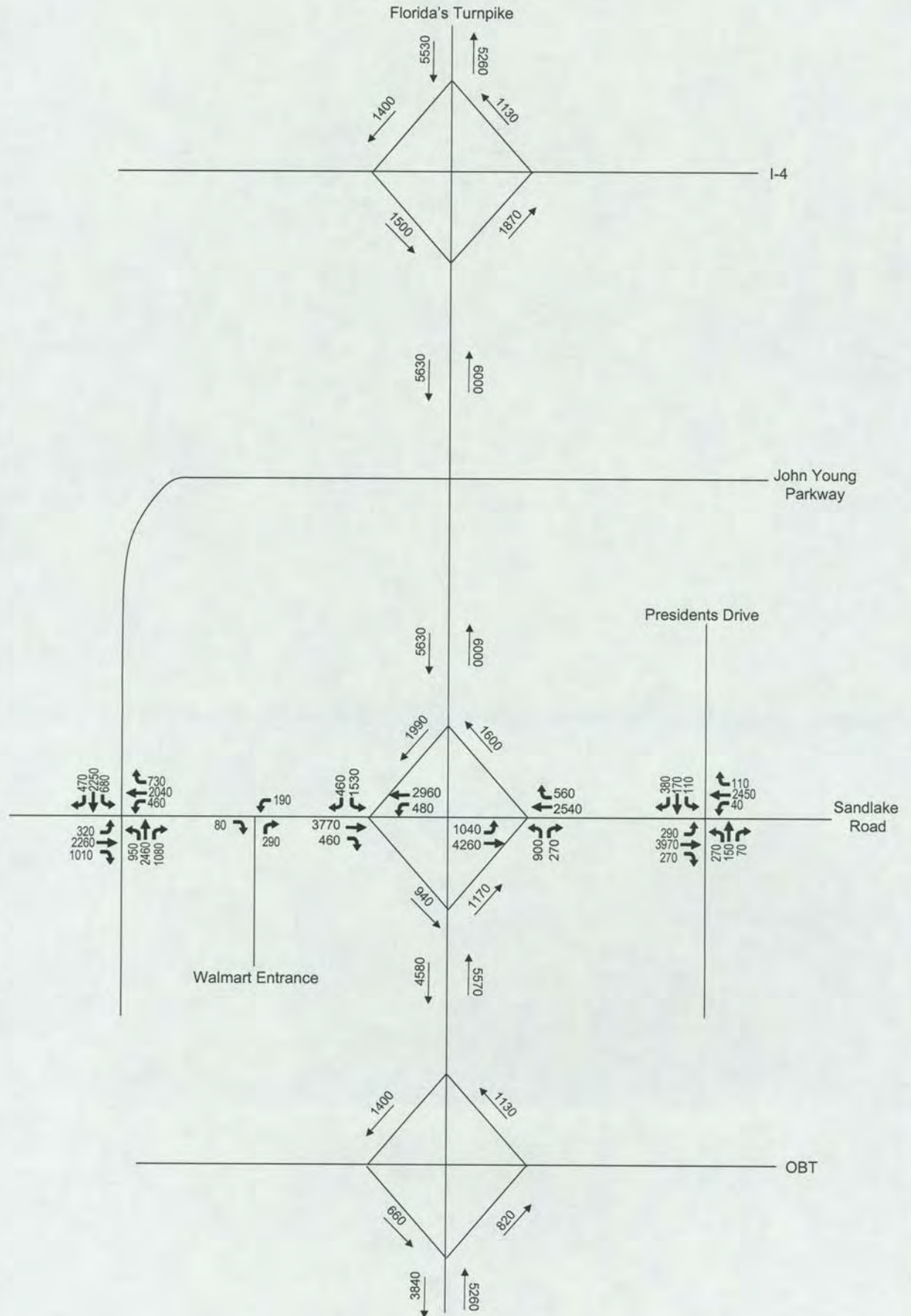
FINANCIAL NUMBER: 407143-3

FIGURE: 5



**Ghyabi & Associates, Inc.**  
Engineering & Planning

7575 Dr. Phillips Blvd., Suite 225, Orlando, FL 32819  
Telephone: (407) 351-8733 Fax: (407) 351-8247



PROJECT TRAFFIC  
FOR SR 482 PD&E  
AND DESIGN



Alternative 6  
Preliminary 2020 AM Design Hour Volumes

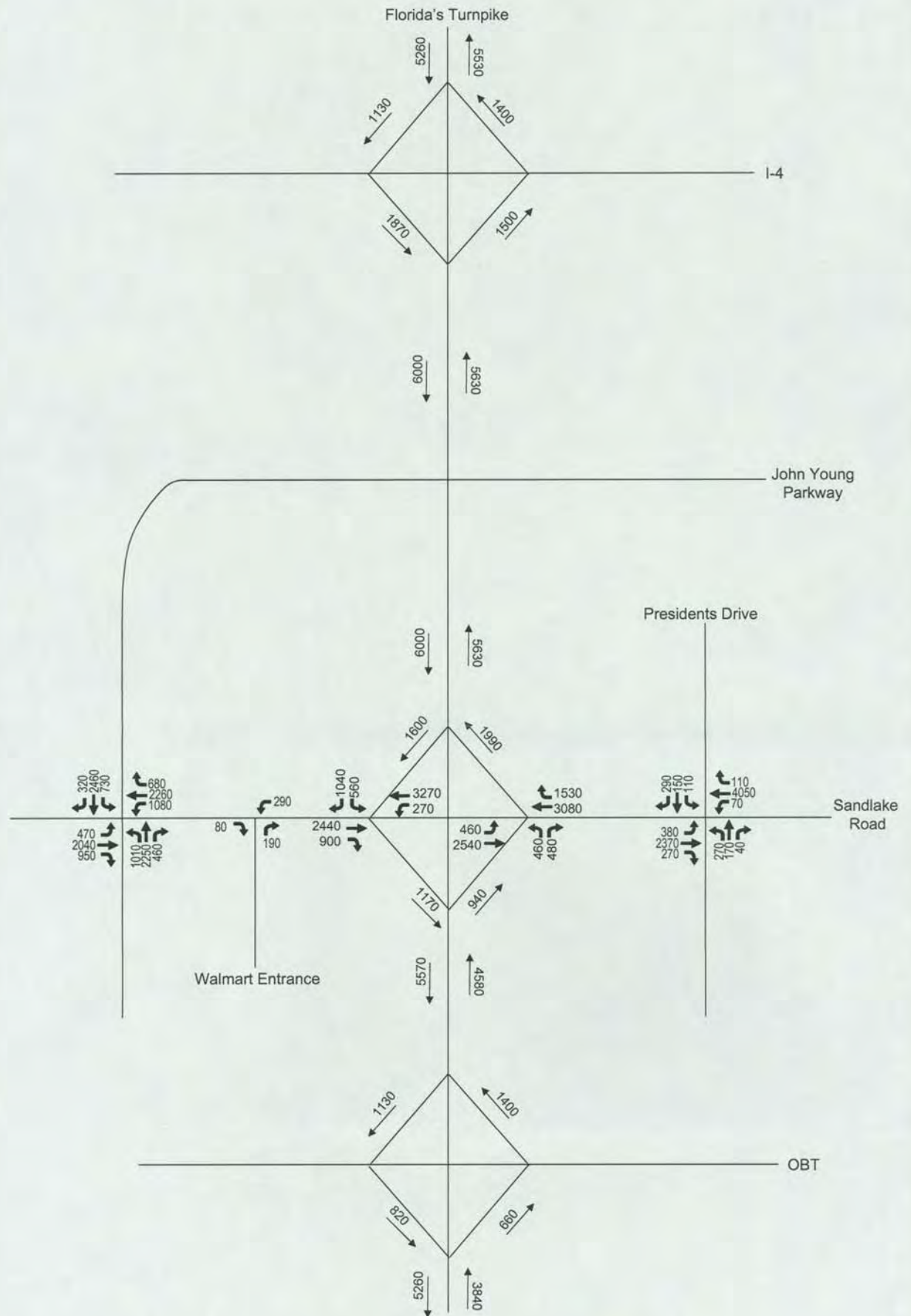
FINANCIAL NUMBER: 407143-3

FIGURE: 6



Ghyabi & Associates, Inc.  
Engineering & Planning  
7575 Dr. Phillips Blvd., Suite 225, Orlando, FL 32819  
Telephone: (407) 351-8733 Fax: (407) 351-8247





**PROJECT TRAFFIC  
FOR SR 482 PD&E  
AND DESIGN**



**Alternative 6  
Preliminary 2020 PM Design Hour Volumes**

FINANCIAL NUMBER: 407143-3

FIGURE: 7



**Ghyabi & Associates, Inc.**  
Engineering & Planning

7575 Dr. Phillips Blvd, Suite 225, Orlando, FL 32819  
Telephone: (407) 351-8733 Fax: (407) 351-4247



consider the effects of an adjacent upstream or downstream ramp on eight-lane freeway segments. For the southbound-on ramp, where there are geometric differences between alternatives, the eastbound and westbound Sand Lake Road on-ramps in Alternatives 4 and 4a provide the same (or better) level of service when compared to a single southbound-on ramp in Alternative 6.

**Table 1**  
**2020 HCS Ramp Merge/Diverge Analysis**

Movement	Alternative 4				Alternative 4a				Alternative 6			
	AM		PM		AM		PM		AM		PM	
	LOS	Density (pc/mi/ln)	LOS	Density (pc/mi/ln)	LOS	Density (pc/mi/ln)	LOS	Density (pc/mi/ln)	LOS	Density (pc/mi/ln)	LOS	Density (pc/mi/ln)
NB Off	D	32.5	C	27.4	D	32.5	C	27.4	D	32.5	C	27.4
NB On	B	19.8	C	20.3	B	19.8	C	20.3	B	19.8	C	20.3
SB Off	F	NA	E	36.4	F	NA	E	36.4	F	NA	E	36.4
SB On (EB)	B	17.4	B	18.8	B	17.4	B	18.8	B	17.2	C	20.6
SB On (WB)	B	18.8	C	21.5	B	18.8	C	21.5				
SB Off (with 2 Lanes)	B	19.0	B	17.2	B	19.0	B	17.2	B	19.0	B	17.2

### Intersection Analysis

An arterial analysis was performed using Synchro for the intersections along Sand Lake Road. It included the intersections at John Young Parkway, the Turnpike southbound ramp terminal, the Turnpike northbound ramp terminal and at Presidents Drive. The committed improvements modeled in the evaluation include the John Young Parkway and Sand Lake Road Single Point Urban Interchange (SPUI) west of the Turnpike interchange alternative, and the six-lane widening of Sand Lake Road from just west of Presidents Drive to Orange Blossom Trail. Intersection improvements identified in the SR 482 PD&E study at Presidents Drive were also included in the evaluation.

During the evaluation of intersection operations, it was determined that a third left turn lane for the southbound off-ramp intersection would be needed to alleviate peak hour delay during the AM period. For Alternatives 4 and 4a, it is recommended that the through lane entering the Wal-Mart/Lowe's shopping center be converted to a shared through-left lane to provide the additional left turn capacity needed.



**Table 2** depicts the results of the year 2020 intersection level of service analysis for all alternatives. Alternatives 4 and 4a have the same results since they have the same intersection geometry. As shown in the table, all alternatives operate a LOS F at the interchange intersections during the AM design hour. During the PM design hour, Alternatives 4 and 4a operate at LOS B and C for the southbound and northbound ramp intersections, respectively. In both the AM and PM design hour, Alternative 4/4a outperforms Alternative 6 with less delay at the interchange intersections.

**Table 2**  
**2020 Synchro Intersection Level of Service**

Intersection Locations	Alternative 4 and 4A				Alternative 6			
	AM		PM		AM		PM	
	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)
Sand Lake Rd @ John Young Pkwy.	D	53.6	E	75.3	E	62.7	E	72.8
Sand Lake Rd @ Turnpike SB Ramp(s)	F	103.6	B	13.0	F	174.1	E	73.6
Sand Lake Rd @ Turnpike NB Ramps	F	156.6	C	27.8	F	210.9	D	47.4
Sand Lake Rd @ Presidents Dr.	F	92.2	F	123.0	F	110.8	F	134.1
Total Delay (in sec/veh)		406.0		239.1		558.5		327.9

Highlighted cells indicate best performing alternative.

### CORSIM Analysis

A micro-simulation analysis was performed using CORSIM to evaluate the integrated system consisting of the Turnpike Mainline, ramps and arterial intersections. The simulation included all intersections evaluated in the Synchro analysis. Modifications to alternatives identified in the isolated HCS ramp merge/diverge analyses and Synchro intersection analyses were included in the CORSIM analysis. These modifications were the additional lanes on the ramps to and from the north and the additional southbound left turn lane (shared through-left) at the intersection of the southbound off-ramp.

**Table 3** shows the resulting average segment speeds north and south of the interchange at the merge/diverge areas. The results show similar speeds across alternatives with the exception of the southbound and northbound off-ramps during the AM period. There is a significant reduction in speed for the



northbound and southbound diverge areas in the AM peak hour for Alternative 6. This is a result of the spillback of vehicles from the interchange intersections to the Mainline due to the congestion along eastbound Sand Lake Road. Since Alternative 4 has a shorter length for the southbound off-ramp than Alternative 4a, queues would extend into the Mainline and produce a lower speed than Alternative 4a. The extended length of the southbound-off ramp in Alternative 4a allow for vehicles to be stored within the limits of the off-ramp with minimal impact to the Mainline.

**Table 3**  
**2020 CORSIM Freeway Segment Average Speed (mph)**

Location	Link Type	Alternative 4		Alternative 4a		Alternative 6	
		AM	PM	AM	PM	AM	PM
Northbound							
North of Sand Lake Road	Diverge	58.35	62.09	56.70	62.06	17.45	62.06
South of Sand Lake Road	Merge	60.44	60.77	60.52	60.68	60.57	60.99
Southbound							
North of Sand Lake Road	Diverge	44.65	59.39	53.43	57.08	30.72	59.23
South of Sand Lake Road	Merge	62.30	61.37	62.23	61.40	62.04	60.97

Highlighted cells indicate best performing alternative.

**Table 4** shows the network-wide statistics for the CORSIM analysis. The results indicate that Alternatives 4 and 4a outperform Alternative 6 with lower delays and a higher average network speed. Alternatives 4 and 4a have similar system-wide statistics with only slight improvements in delay and speed with Alternative 4.

**Table 4**  
**2020 CORSIM Network-wide Statistics**

Measure of Effectiveness	Alternative 4		Alternative 4a		Alternative 6	
	AM	PM	AM	PM	AM	PM
Total Vehicle-Miles Traveled (VMT)	57310	57064	56993	57097	55610	56633
Move Time (hrs)	1084	1076	1084	1083	1034	1066
Delay Time (hrs)	1091	680	1139	689	1540	685
Total Time (hrs)	2175	1756	2224	1772	2573	1752
Average Speed (mph)	26.4	32.5	25.6	32.2	21.6	32.3

Highlighted cells indicate best performing alternative.



Observations from the CORSIM animation confirm the benefits of Alternative 4/4a over Alternative 6. In all alternatives, there is persistent eastbound congestion along Sand Lake Road in the AM period. This congestion extends from the Turnpike ramp intersections to John Young Parkway. The closely spaced interchange intersections in Alternative 6, however, result in spillback of eastbound and westbound left turn vehicles into west and east interchange intersections, respectively. This prohibits vehicles from efficiently exiting the Turnpike ramps and causes spillback onto the Mainline. In Alternatives 4 and 4a, the greater spacing between interchange intersections coupled with the loop ramp that removes the westbound to southbound Turnpike movement creates shorter queues and reduced delay for vehicles exiting the Turnpike. As stated earlier, the longer length of the southbound off-ramp in Alternative 4a allows for vehicles to be stored within the limits of the ramp and not on the Mainline. Another benefit of Alternative 4/4a over Alternative 6 is the signalization of the left-turn westbound movement into the Wal-Mart/Lowes shopping center. As an unsignalized intersection in Alternative 6, the westbound left-turn queue extends into the westbound through lanes. This is a result of the opposing eastbound through congestion that prevents westbound left-turning vehicles from entering the plaza.

### **Conclusion and Recommendation**

The analyses performed on the freeway merge/diverge areas, arterial intersection, and integrated freeway-arterial system show that Alternatives 4a is the better performing alternative for the following reasons:

- The greater intersection spacing and provision of the eastbound to southbound loop ramp result in lower delay at the east and west interchange intersections.
- The extended southbound off-ramp allows for greater storage for exiting vehicles.
- The signalization of the Wal-Mart/Lowes entrance reduces delay for vehicles entering the shopping plaza and prevents westbound left-turn vehicles from extending into the westbound through lane.

The analysis also identified the following mitigating modifications to Alternative 4a that were included as part of the evaluation:

- Provide two-lane instead of one-lane ramps to and from the north.
- Convert the through lane at the southbound off ramp intersection at Sand Lake Road to a shared through and left lane.

It should be noted that while the Synchro intersection analysis shows LOS F for the interchange intersections during the AM period, the micro-simulation animation shows that the exiting ramp queues do not exceed the length of the



ramp or extend onto to the Mainline. Additionally, the LOS F condition is attributed to the high eastbound through traffic along Sand Lake Road. This condition could be mitigated by widening Sand Lake Road to eight-lanes or by moving some of the Turnpike traffic to John Young Parkway with the addition of supplemental Turnpike ramps. Providing additional Turnpike access to and from the north at John Young Parkway would reduce some of the demand along Sand Lake Road but could adversely impact the John Young Parkway/Sand Lake Road SPUI. These impacts contributed to the elimination of alternatives with Turnpike access from John Young Parkway during the initial evaluation by the PD&E consultant.

It is therefore recommended that the SR 482 PD&E include interchange Alternative 4a with the specified modifications as the best performing interchange alternative from a traffic operations perspective.

Additional detailed analysis will be performed for the proposed interchange as part of the Turnpike Interchange Justification process and FDOT interchange proposal policies and procedures. This analysis may include evaluation of supplemental ramps at John Young Parkway.

# **APPENDIX Q – TURNPIKE INTERCHANGE A.N. COMMENTS AND RESPONSES**



## **FLORIDA'S TURNPIKE INTERCHANGE - ADVANCED NOTIFICATION COMMENTS & RESPONSES**

Advanced Notification responses were received from 5 Agencies:

- City of Orlando Transportation Planning Department
- Orange County Public Works Department, Transportation Planning Division
- Orange County Environmental Protection Division
- U.S. Fish and Wildlife Service
- Clearinghouse (South Florida Water Management District)

A summary of each agency comments and responses, as appropriate are provided below.

### **City of Orlando – Transportation Planning Department** (Letter dated January 25, 2006).

Comment: Full accommodation and the potential enhancement of bicycle, pedestrian, and transit modes should be included as part of the project. The project will also need to accommodate the crossing of the Shingle Creek Multi-use Trail. The Shingle Creek Trail Bridge should be placed at an elevation that will allow for a trails underpass. Wider FDOT standard trail width (12 feet or greater) sidewalks will be needed for the short segment of the right-of-way where the trail runs parallel to the roadway.

Response: Coordination with the City of Orlando – Transportation Planning Department has occurred regarding bicycle, pedestrian and transit facilities. The Shingle Creek Trail will be incorporated into the project.

### **Orange County Public Works Department – Transportation Planning Division** (Letter dated January 25, 2006)

Comment: The project is consistent with the county's approved 2020 Long Range plan map.

Response: None required.

### **Orange County Environmental Protection Division** (Letter dated January 12, 2006)

Comment: Make feasible attempts to incorporate areas currently not receiving stormwater runoff treatment into the stormwater management system. Minimize and avoid wetlands where possible and to compensate for wetland impacts; mitigation should be within the Shingle Creek Hydrologic Basin. There should be no increase in the 100-year floodplain elevation as a result of the proposed project. Maintain the movement of wildlife in the Shingle Creek wetlands and under SR 482. Sediment and erosion control measures should be in place to prevent the discharge of turbid water offsite and to protect the water quality of Shingle Creek. Coordinate with the appropriate agencies to ensure that all flora and fauna listed as threatened endangered or species of special concern is addressed. Air quality should be addressed to minimize the affects. Note that there is one petroleum-contaminated site located near the proposed construction.

Response: Stormwater treatment has been incorporated into the project. All attempts to avoid and/or minimize impacts to wetlands have occurred (see Wetland Evaluation Report). However some impacts will occur and will be mitigated for through the use of SB 1986. No impact to wildlife movement will occur. Wildlife movement in the Shingle Creek wetlands will be maintained under SR 482 and the Turnpike. During construction appropriate Best Management Practices including the use of turbidity barriers will be required. An Endangered Species Biological Assessment has been prepared for the project and has been reviewed by appropriate agencies including US Fish and Wildlife Service. No air quality impacts will occur with the project. A Contamination Screening

Evaluation has been prepared and all identified potential contamination sites have been documented in the Contamination Screening Evaluation report.

**U.S. Fish and Wildlife Service** (Letter dated December 28, 2005)

Comment: The Service requests a description of the habitat in the undeveloped parcels and a map detailing the location of the conservation areas. The Service recommends that the wetlands within the project area be delineated and evaluated using Universal Mitigation Assessment Module (UMAM). If impacts to wetlands are unavoidable, the Service recommends minimizing the impacts as much as possible and that all impacts to wetlands be mitigated, preferably mitigation should be in-kind and within the same watershed basin. A survey for endangered species should be conducted within the project area.

Response: An Endangered Species Biological Assessment has been prepared for this project and has been submitted to the USFWS office for review and concurrence of no adverse impact to any listed species. Mitigation for any impacts to wetlands will be through the SB 1986.

**Florida Department of Environmental Protection – Clearinghouse** (Letter dated February 21, 2005)

Comment: The state has no objections to allocation of federal funds for the subject project and, therefore, the funding award is consistent with the Florida Coastal Management Program (FCMP). The applicant must, however, address the concerns identified by the reviewing agencies prior to project implementation. The state's continued concurrence with the project will be based, in part, on the adequate resolution of any issues identified during this and subsequent reviews. Clearinghouse comments were received from:

- **South Florida Water Management District**

Comment: The project will require an ERP. All wetlands should be identified. Wetland mitigation areas under conservation easement may be present. Submerged lands (Shingle Creek) and flood plains may be impacted.

Response: An ERP will be obtained during the design phase of this project. Wetland Evaluation Report has been prepared and all efforts to minimize impacts have occurred. It is noted that conservation lands are present within the project area. No impact to these lands is anticipated. A coordination meeting was held with SFWMD staff on 9/26/05.

# **APPENDIX R – TURNPIKE INTERCHANGE SHPO COORDINATION LETTER**





John - FYI

FLORIDA DEPARTMENT OF STATE  
**Glenda E. Hood**  
Secretary of State  
DIVISION OF HISTORICAL RESOURCES

Mr. Daniel T. Penton  
Post, Buckley, Schuh & Jernigan  
1901 Commonwealth Lane  
Tallahassee, Florida 32303

October 20, 2003

Re: DHR Project No. 2003-8469 / Received by DHR: September 25, 2003 *PAK 10/21/03*  
1) *Cultural Resource Assessment Review Request: Widening of Florida's Turnpike from US 192 to SR 50*  
2) *Cultural Resource Assessment Survey of New Pond Sites along Florida's Turnpike: An Addendum*  
Orange, Osceola Counties, Florida

Dear Mr. Penton:

Our office received and reviewed the referenced projects in accordance with Chapter 267, *Florida Statutes*, and implementing state regulations, for possible impact to historic properties listed, or eligible for listing, in the *National Register of Historic Places*, or otherwise of historical, architectural or archaeological value. The State Historic Preservation Officer is to advise and assist state and federal agencies when identifying historic properties, assessing effects upon them, and considering alternatives to avoid or minimize adverse effects.

The cultural resource assessment survey of the Florida Turnpike Mainline PD&E study resulted in the identification of three newly recorded archaeological sites (8OR4887, 8OR4888, 8OR9604), one archaeological occurrence (8OR9605), and three historic resources (8OR9567, 8OR4314, 8OR4315).

The four archaeological resources are precontact or historic lithic scatters. Due to the sparse and mundane nature of the artifact assemblages, it is the opinion of Post, Buckley, Schuh and Jernigan (PBS&J), that 8OR4887, 8OR4888, 8OR9604, and 8OR9605 are considered ineligible for listing in the *National Register of Historic Places*. Based on the information provided, our office concurs with this determination.

Information regarding resource 8OR9605 is unclear within the report, as it has been referred both as an archaeological occurrence and an archaeological site at different instances. In the future, resources similar to site 8OR9605, which consists of less than three, non-diagnostic finds, should be classified as an archaeological occurrence and not as an archaeological site and should not be recorded with the Florida Master Site File.

8OR4314, 8OR4315 are residential structures circa 1935. Due to common design, lack of known historical association, and non-historic modifications, it is the opinion of PBS&J, that 8OR4314 and 8OR4315 do not appear to meet the criteria for listing in the *National Register of Historic Places*. Based on the information provided, our office concurs with this determination.

500 S. Bronough Street • Tallahassee, FL 32399-0250 • <http://www.flheritage.com>

<input type="checkbox"/> Director's Office (850) 245-6300 • FAX: 245-6435	<input type="checkbox"/> Archaeological Research (850) 245-6444 • FAX: 245-6436	<input checked="" type="checkbox"/> Historic Preservation (850) 245-6333 • FAX: 245-6437	<input type="checkbox"/> Historical Museums (850) 245-6400 • FAX: 245-6433
<input type="checkbox"/> Palm Beach Regional Office (561) 279-1475 • FAX: 279-1476	<input type="checkbox"/> St. Augustine Regional Office (904) 825-5045 • FAX: 825-5044	<input type="checkbox"/> Tampa Regional Office (813) 272-3843 • FAX: 272-2340	

8OR9567 (Old Oakland African-American Cemetery) consists of at least 40 graves. The earliest marker dates to 1921 and the most recent burial dates to 1949. Since there is a lack of historic documentation of minority communities in Oakland and surrounding small towns during the late nineteenth and early twentieth centuries, it is the opinion of PBS&J, that the Old Oakland African-American Cemetery has the unique potential to yield valuable information about the population with regards to demographics, gender, and early burial practices. Based on Criteria D, PBS&J consider 8OR9567 potentially eligible for listing in the *National Register of Historic Places*. Based on the information provided, our office does not concur with this determination of eligibility. It is the opinion of this office that 8OR9567 appears to be potentially eligible for listing in the *National Register of Historic Places*, based on Criterion C, due to the unique shell markers present in the cemetery.

It is the opinion of PBS&J that the cemetery will not be affected by the proposed project, as it is outside the Area of Potential Effect (APE). They recommended that, since the boundaries of the cemetery are unclear, some form of remote sensing must be utilized to determine the exact boundaries of the cemetery. Based on the information provided, it is the opinion of this office that preservation of Site 8OR9567 can be achieved through avoidance. It is proposed that a 25-foot buffer zone be created around the cemetery and left undeveloped, in the event that any unmarked graves lie outside the identified site area. In addition to the plan for avoidance, our office recommends fencing of the site area and buffer zone during construction. Special care should be taken in areas immediately outside the buffer zone, since the boundaries of the cemetery are unspecified. There is a strong possibility that the project may affect unmarked burials, lying outside the known limits of the cemetery. In the event that unmarked human remains are encountered during permitted activities, all work shall stop immediately and the proper authorities notified in accordance within Section 872.05, *Florida Statutes*.

The cultural resource assessment survey of 19 proposed pond sites identified one previously recorded archaeological site (8OR9605). Due to the relatively sparse and unexceptional artifact assemblage, PBS&J does not consider the site regionally or locally significant. Based on the information provided, our office concurs with this determination and finds that site 8OR9605 does not appear to meet the criteria for listing in the *National Register of Historic Places*.

We find the submitted report complete and sufficient in accordance with Chapter 1A-46, *Florida Administrative Code*. If you have any questions concerning our comments, please contact Mini Sharma, Historic Sites Specialist, at [mtsharma@dos.state.fl.us](mailto:mtsharma@dos.state.fl.us) or (850) 245-6333. Your interest in protecting Florida's historic properties is appreciated.

Sincerely,



Janet Snyder Matthews, Ph.D., Director, and  
State Historic Preservation Officer

Xc: Raymond Aske, FDOT-Turnpike District  
James St. John-FHWA  
Leroy Irwin, FDOT-CEMO